

University of Delaware Fieldwork in the Eastern Desert of Egypt, 1993

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The University of Delaware concluded excavations in the region of 'Abu Sha'ar and Bir 'Abu Sha'ar el-Qibli ca. 20 km north of Hurghada on the Red Sea coast of Egypt in 1993 (Fig. 1).¹ The project also continued surveying in the Eastern Desert, work which will be discussed only briefly here.

Excavations this season concentrated on three locations: (1) the small *hydreuma* (fortified water station) near Bir 'Abu Sha'ar el-Qibli

Our work this season would not have been possible without the kind permission and assistance of the Egyptian Antiquities Organization, and especially of its former chairman, Dr. Mohammed Ibrahim Bakr; Dr. M. Balboush; Dr. M. El-Saghier; and our inspectors, Mr. Sami Ahmed Fahmy and his wife Nagah Hussein. Thanks should also be extended to all of our friends at the Qena inspectorate for assisting Dr. Jennifer Sheridan in her study of the epigraphic material stored at Denderah. Financial support came from Dumbarton Oaks, a General University Grant from the University of Delaware, a grant from the Dean of the College of Arts and Science of the University of Delaware, private donors, and paying volunteers. Brian Cannon and Hans Barnard drew the plans which Heather Beckman prepared for publication. Christine Dykstra drew Fig. 15. S. E. Sidebotham took the photographs.

¹For previous seasons (1987, 1990, 1991, 1992), see S. E. Sidebotham, J. A. Riley, H. A. Hamroush, and H. Barakat, "Fieldwork on the Red Sea Coast: The 1987 Season," *JARCE* 26 (1989), 127–66; S. E. Sidebotham, "University of Delaware Archaeological Project at 'Abu Sha'ar: The 1990 Season," *Newsletter of the American Research Center in Egypt* 153 (spring 1991), 1–6; S. E. Sidebotham, "A Roman Fort on the Red Sea Coast," *Minerva* 3,2 (March/April, 1992), 5–8; S. E. Sidebotham, "The 1991 Season of Archaeological Fieldwork at 'Abu Sha'ar (Red Sea Coast), Egypt Conducted by the University of Delaware," *Archaeological News* 17, 1–4 (1992), 31–34; S. E. Sidebotham, "University of Delaware Archaeological Project at 'Abu Sha'ar: The 1992 Season," *Newsletter of the American Research Center in Egypt* 161/162 (1993), 1–9; S. E. Sidebotham, "Preliminary Report on the 1990–1991 Seasons of Fieldwork at 'Abu Sha'ar (Red Sea Coast)," *JARCE* 31 (1994), forthcoming; R. S. Bagnall and J. A. Sheridan, "Greek and Latin Documents from 'Abu Sha'ar, 1990–1991," *JARCE* 31 (1994), forthcoming.

(27° 22.141' N/33° 37.981' E)² (Fig. 2) ca. 5.5 km west of the main fort at 'Abu Sha'ar;³ (2) a water point ca. 1 km west of the main fort at 'Abu Sha'ar (27° 21.915' N/33° 40.424' E) (Fig. 3); and (3) the main fort at 'Abu Sha'ar itself (27° 22.125' N/33° 40.970' E) (Fig. 4).

THE HYDREUMA NEAR BIR 'ABU SHA'AR EL-QIBLI

The University of Delaware surveyed and drew a plan of the *hydreuma* near Bir 'Abu Sha'ar el-Qibli in 1987,⁴ but excavated there only in 1993 revealing an installation badly damaged by water run-off from the adjacent mountains. Outer fort walls enclosing an area ca. 41.60 m N-S × ca. 49.10 m E-W⁵ were built of local igneous boulders and cobbles; widths at the wall bases were ca. 1.6–1.64 m with no more than ca. 0.40–0.50 m of original wall height extant. There was a single gate on the west wall of indeterminate size and design, plus at least three towers: one north of and adjacent to the gate, another at the southeast corner of the fort, and a third at the center of the fort's east wall. There were undoubtedly others, but this could not be determined during the 1993 season. There was a large cistern at the southeastern interior corner and numerous hydraulic troughs and tanks both inside

²These and all coordinates in the text were obtained by averaging multiple readings from the Magellan Global Positioning System, on which see *Magellan Systems Corporation User Guide GPS NAV 5000 D* (San Dimas, Calif., 1992), *passim*.

³On which see Sidebotham, et al., "Fieldwork," 147–48.

⁴*Ibid.*

⁵*Ibid.*, 147, provides dimensions obtained from surface surveying of about 46 m × ca. 53 m.

the fort and abutting the exterior fort walls (see *infra*).

The project excavated five trenches and cleared sections of walls and the perimeter of the large internal cistern. Surveying revealed a water channel leading from nearby Bir 'Abu Sha'ar el-Qibli towards the *hydreuma* and sections of a Roman road northwest of the site. There were relatively few small finds: a group of ostraca and some pottery were the main chronological indicators.

Trench BAS93-A

BAS93-A (Figs. 2, no. 1; 5) was a 5 m × 5 m trench at the west gate of the fort. A large semicircular tower abutted the gate to the north and outside the trench. In the trench was the edge of a white clay, sand and pebble (009), and brown-gray clay (012) ledge aligned approximately N-S. Its presence, if indeed it was the remains of an architectural feature, was enigmatic. Perhaps it was the remnant of a walking surface associated with the *hydreuma*. Excavation of BAS93-A produced no architecture *in situ* indicating that the original gate had been destroyed by water flow. A *sondage* (015) abutting the western balk about 0.70–0.75 m below sand layer (013) was sterile, suggesting, as did probes sunk in other trenches at the *hydreuma* (see *infra*), that no earlier structures existed or earlier permanent habitation took place at the site.⁶

⁶Survey work here in 1987 recovered some lithic implements, and geologists involved in oil exploration near the *hydreuma* in 1990 showed the author lithic implements they had found in the region. Some lithics were recovered in 1991 at 'Abu Sha'ar and this season in the *hydreuma*; for lithic tools found on the Red Sea coast and in the Eastern Desert, see F. H. Sterns, "The Paleoliths of the Eastern Desert," in *Varia Africana* I, *Harvard African Studies* I, ed. O. Bates (Cambridge, 1917), 48–82; F. Debono, "Expédition archéologique royale au Désert Oriental (Keft-Kosseir). Rapport préliminaire sur le campagne 1949," *Annales du Service des antiquités d'Égypte* 51 (1951), 59–91; M. Prickett, "Quseir Regional Survey," in *Quseir al-Qadim 1978 Preliminary Report*, ed. D. S. Whitcomb and J. H. Johnson (Cairo, 1979), 257–352; C. Montecat, "Un aperçu des industries préhistoriques du Golfe de Suez et du littoral égyptien de la Mer Rouge," *BIFAO* 86 (1986), 239–55; Belgian archaeologists recently began the excavation of the paleolithic cave in the Wadi Sodmein (initially surveyed by Prickett, "Regional Survey," 284–92); J. Zarins, "Ancient Egypt and the Red Sea Trade: The Case for Obsidian in the Predynastic and Archaic Periods," in *Essays in Ancient Civilization Presented to Helene J. Kantor* (*Studies in Ancient Oriental Civilization* 47), ed. B. Williams and A. Leonard (Chicago, 1989), 339–68; There is an ongoing survey of prehistoric

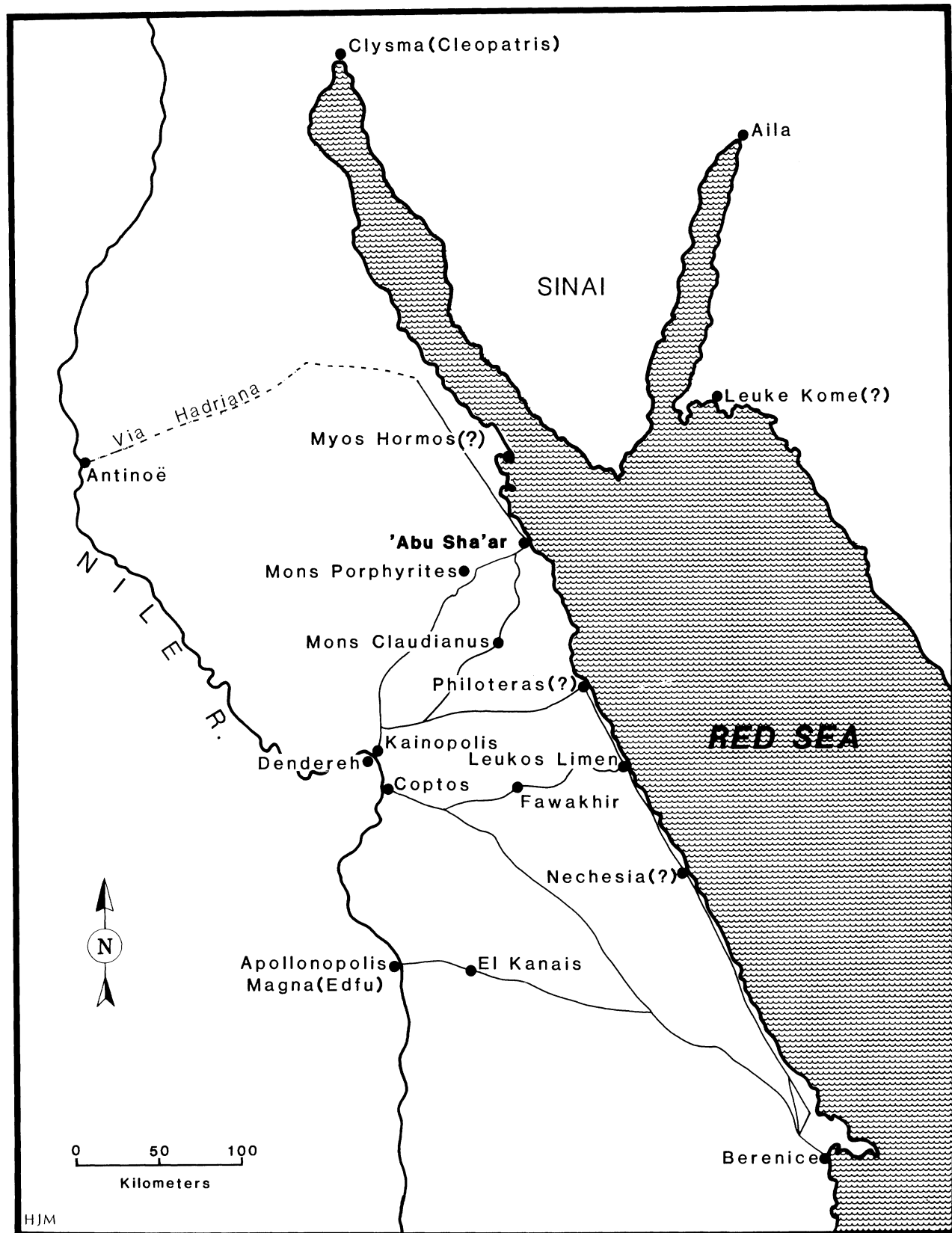
Trench BAS93-B

BAS93-B (Figs. 2, no. 2; 6–7) was a 5 m E-W × 7 m N-S trench midway along the main south wall of the fort, and from the surface it appeared to be located inside a room adjacent to the main southern fort wall. Excavation revealed many fragments of painted wall plaster, suggesting an important area. The exterior face of the southern fort wall (007) was intact, but the inner wall face survived only at the western end of the trench; built of large grayish igneous cobbles and boulders, it measured 1.6 m wide. Abutting the exterior face of the southern fort wall in the southwest corner of the trench were the remains of a hydraulic basin (008/014/024/031).

BAS93-B also preserved remains of an oven and related structures (056/057/065/069/071) built of igneous cobbles and kiln-fired bricks with an arched opening 1.56 m high × 0.41 m wide. This arch joined a circular/oval shaped floor (071) of kiln-fired brick about 0.74–0.75 m in diameter. A narrow passageway of kiln-fired bricks about 0.41 m wide connected this circular area to a large flat rectangular floor (065) east of the oven (overall dimensions 2.90 m E-W × 3.0 m N-S × 0.10 m thick) made of crushed fired brick, pebbles, and mortar. Finds here included much burned bone, some with butcher marks, fragments of lead, and an apparent stone mold (from 068, removed by excavation), which might have been used in a metallurgical process. A deposit (070, removed by excavation) on the floor of the circular/oval portion of the oven (071) contained relatively large quantities of deliberately burned plaster and mortar. This suggests that the oven had multiple uses, perhaps for food preparation, metal working, and as a lime kiln to provide plaster for the hydraulic installations in the fort.

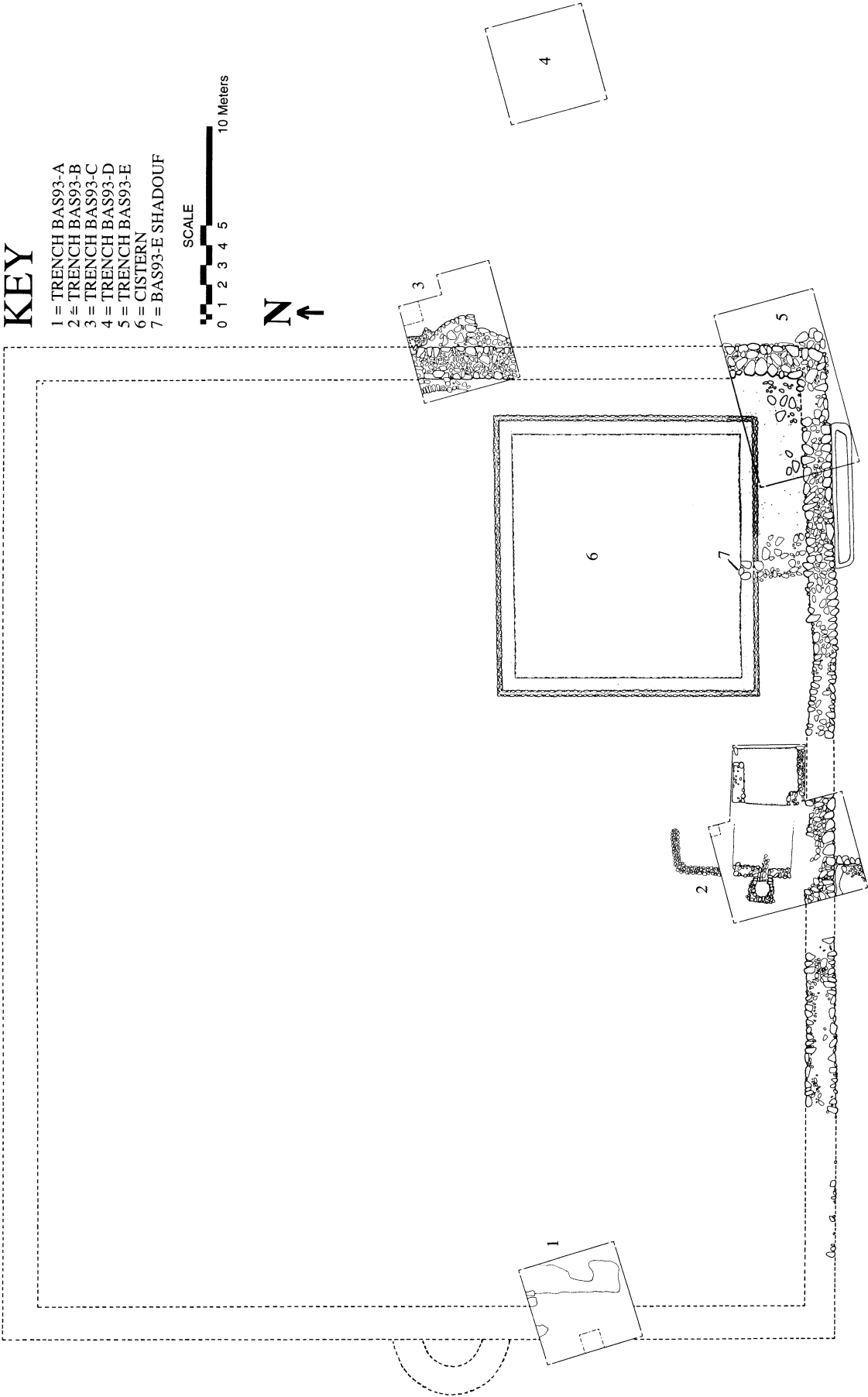
Immediately east of BAS93-B lay a large nicely built plastered basin (2.72 m E-W × 3.78 m N-S), probably of a hydraulic nature (074 Eastern Extension). Its precise relationship to the remains in BAS93-B could not be ascertained.

sites in the Wadi 'Abu Had, on which see A. Bomann, "Search in the Eastern Desert," *Egyptian Archaeology* 3 (1993), 41–43.

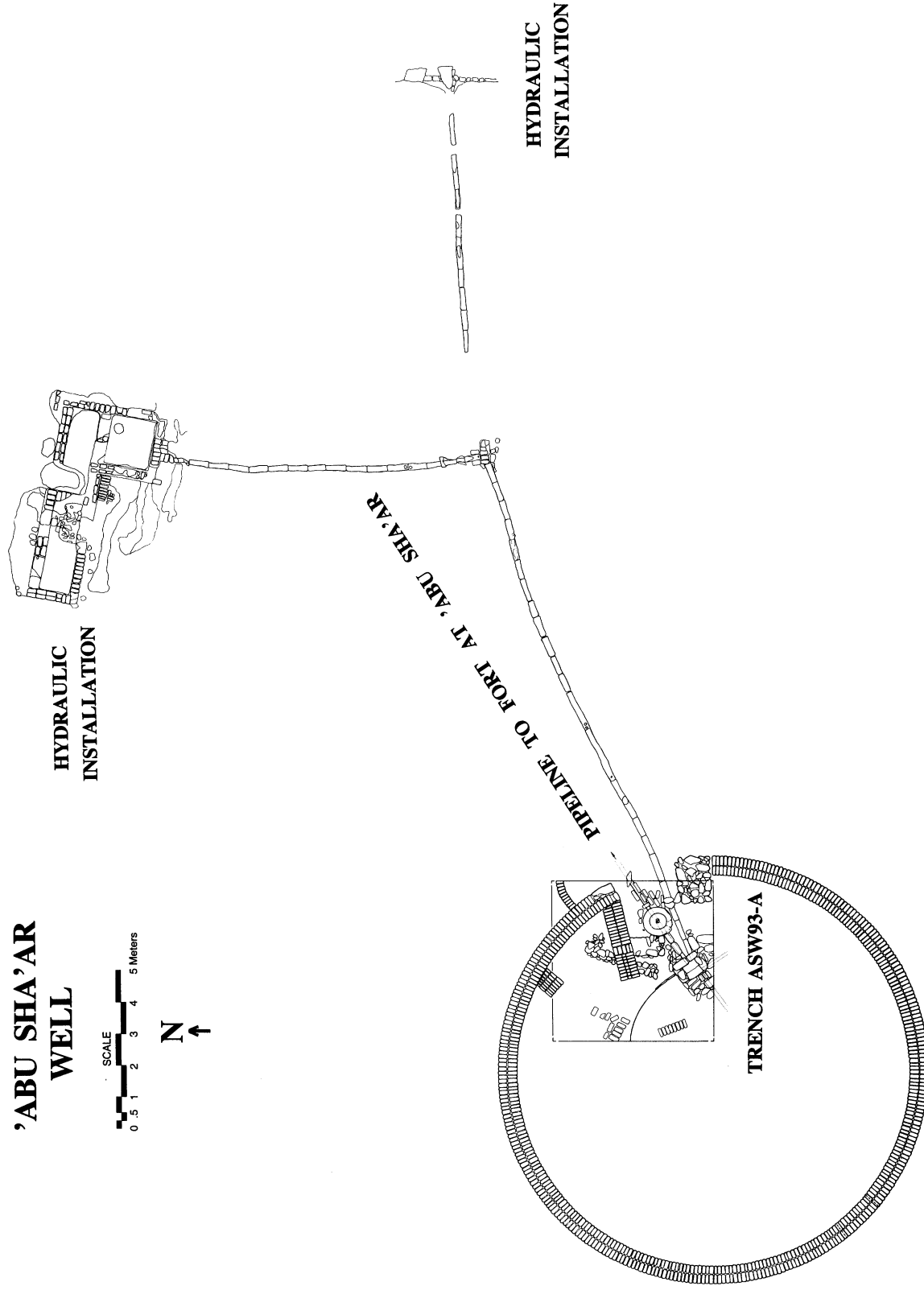


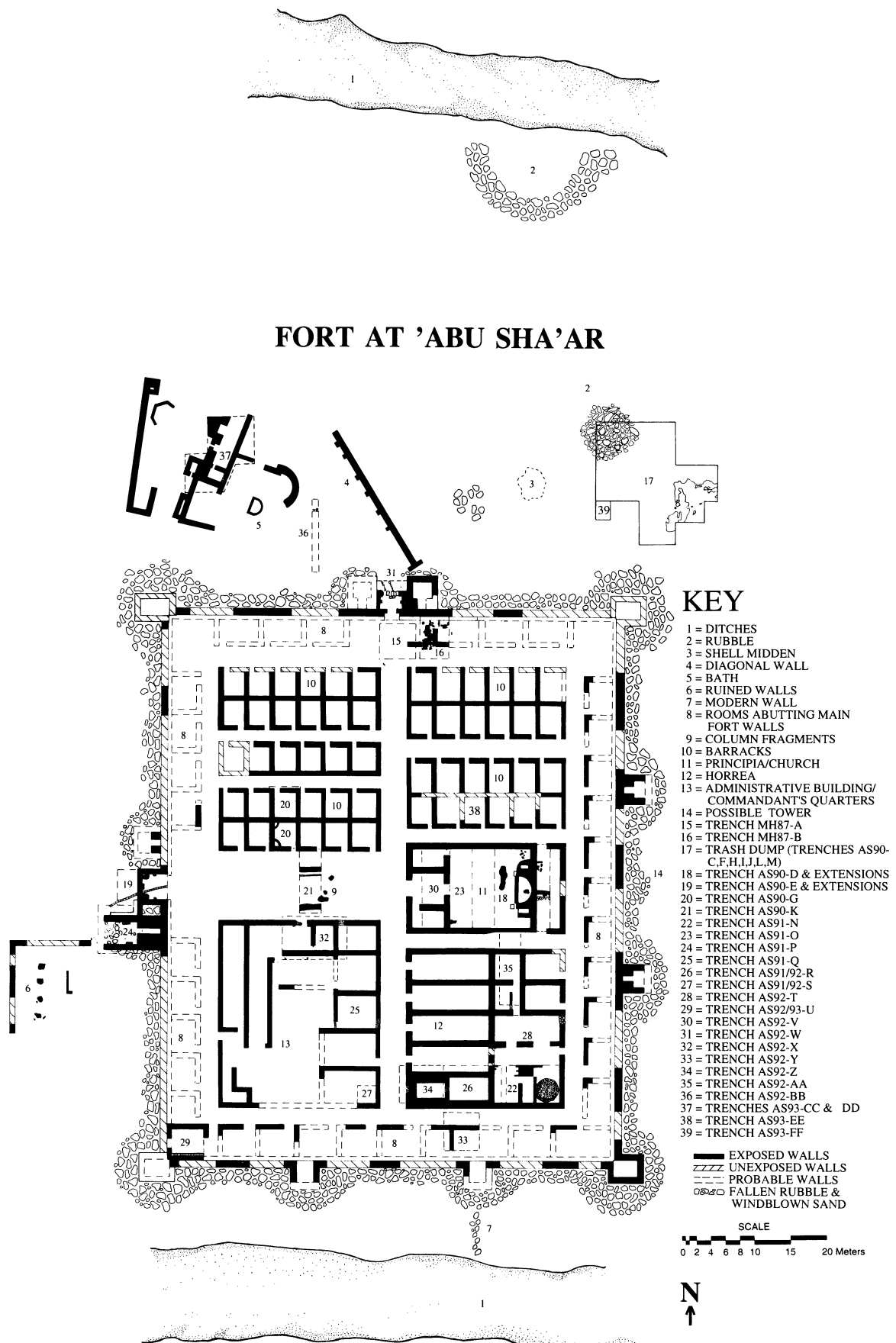
1 The northern shores of the Red Sea in the Roman-Byzantine period

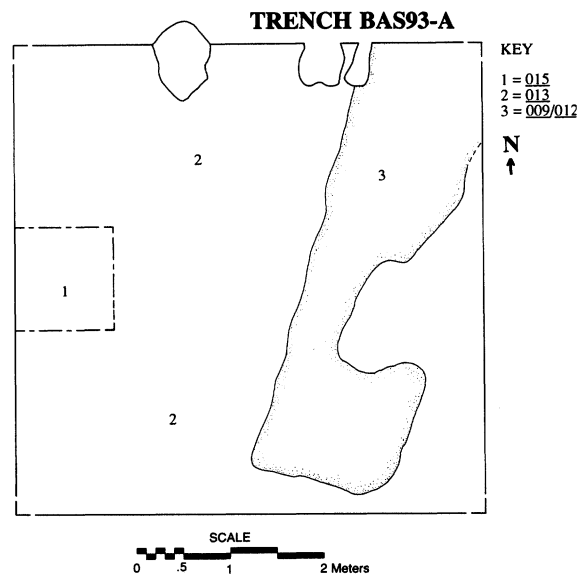
HYDREUMA NEAR BIR 'ABU SHA'AR EL-QIBLI



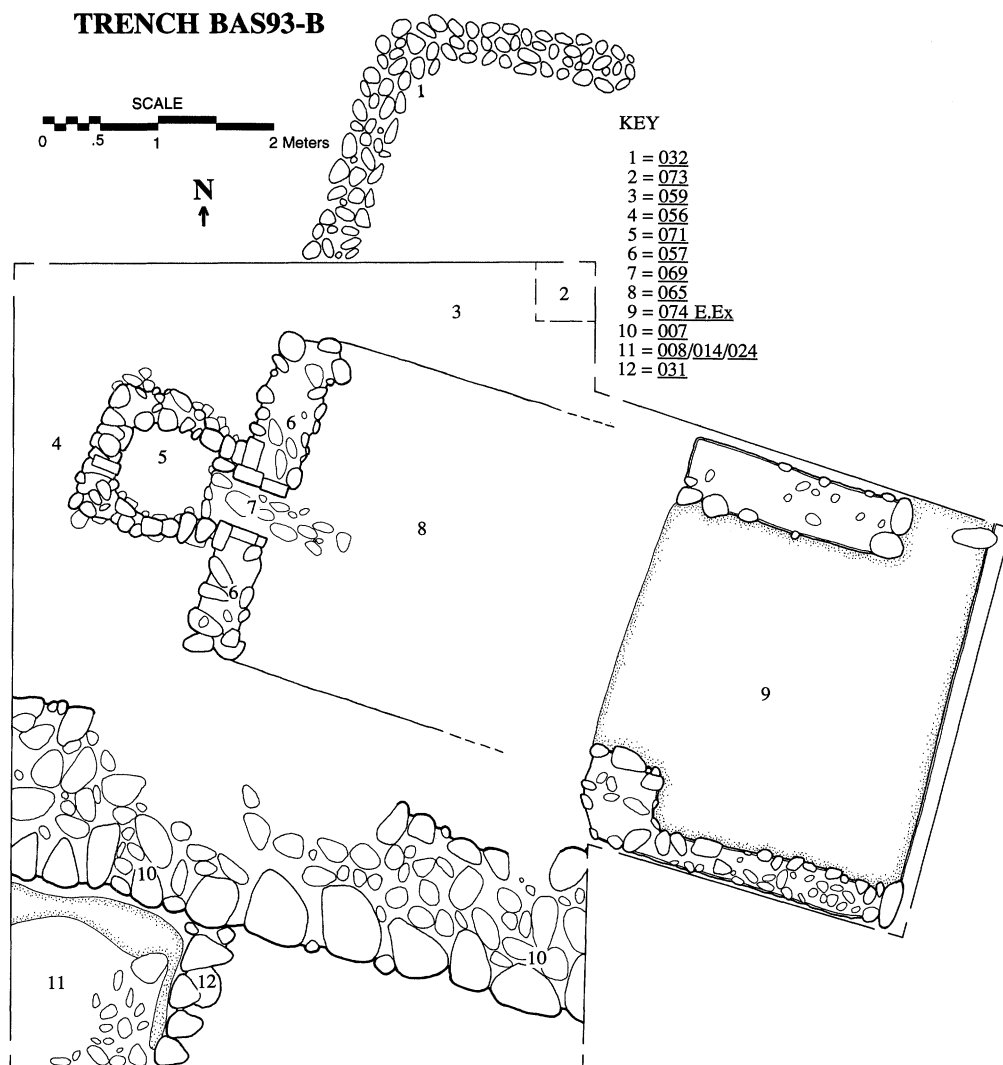
'ABU SHA'AR WELL



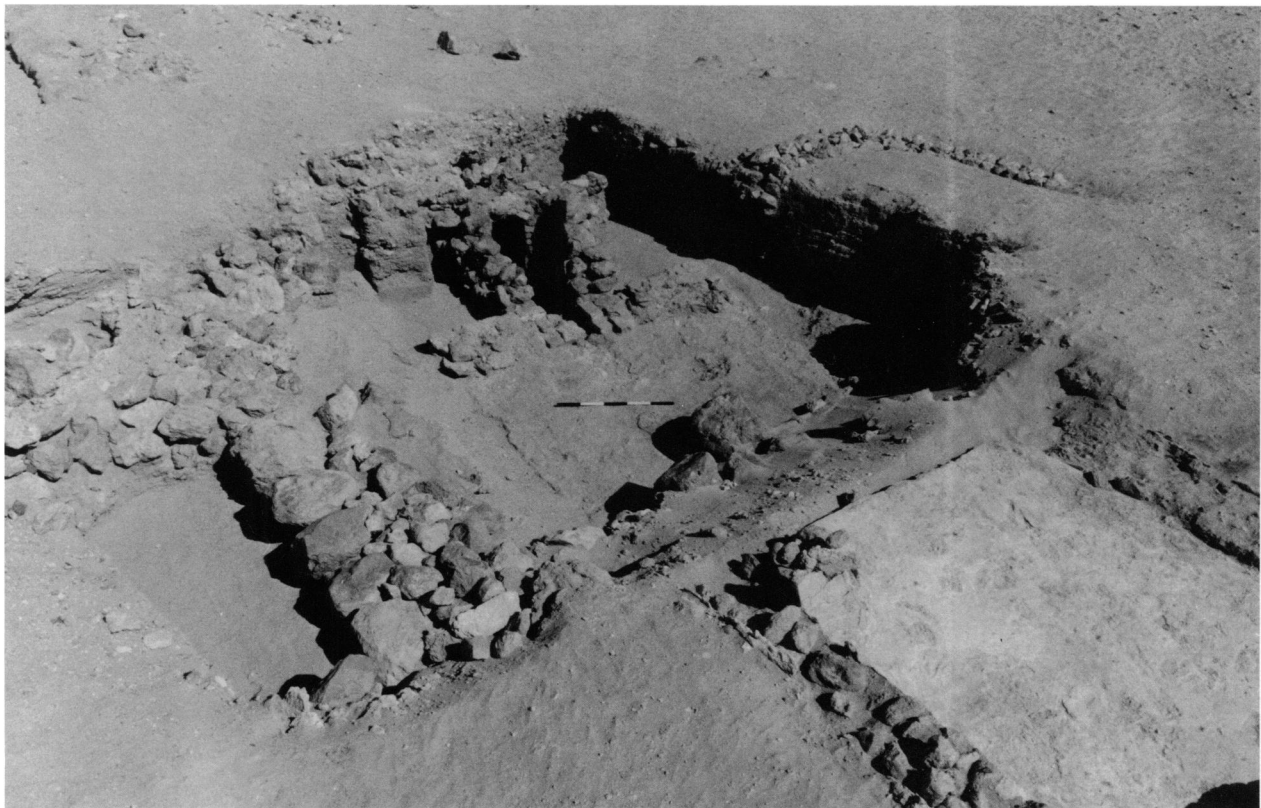




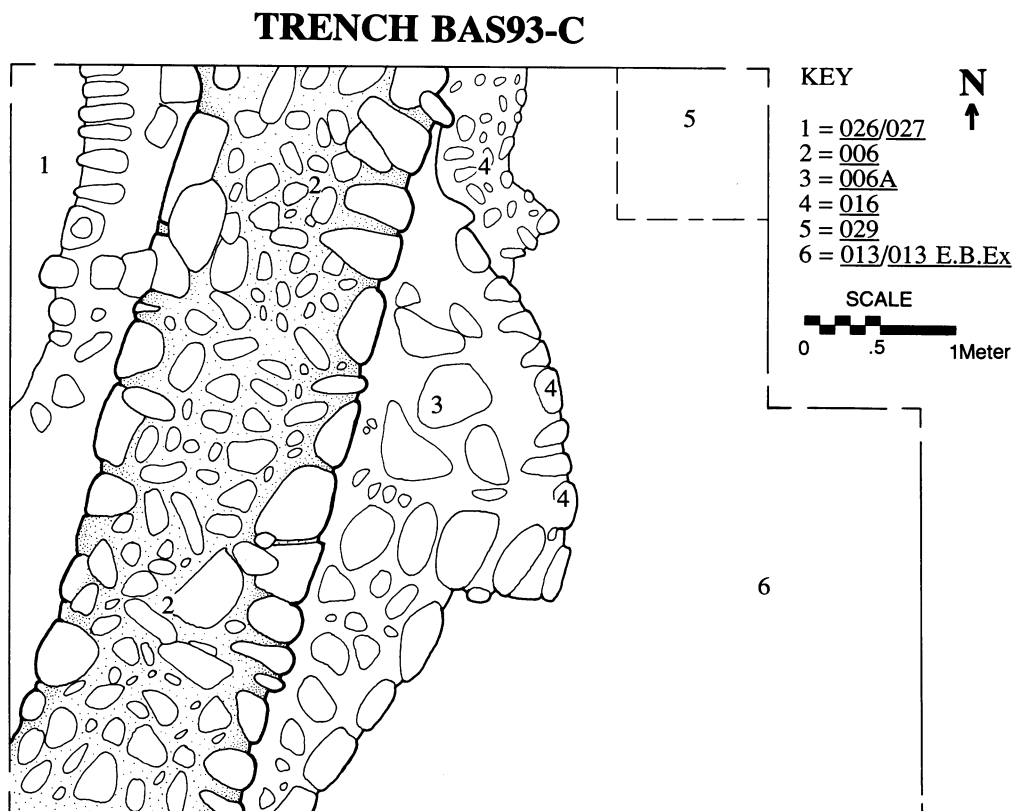
5 Trench BAS93-A



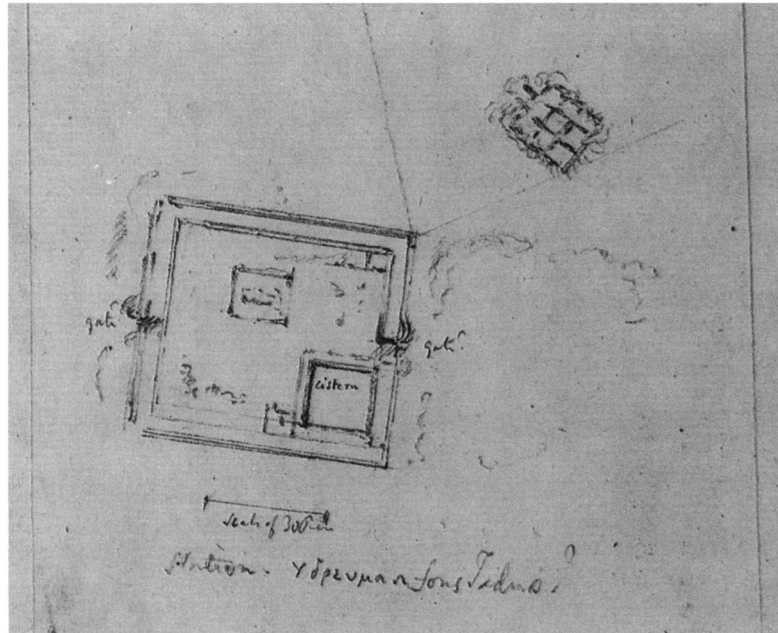
6 Trench BAS93-B



7 Trench BAS93-B looking northwest



8 Trench BAS93-C



9 *Hydreuma* near Bir 'Abu Sha'ar el-Qibli. Sketch by J. G. Wilkinson
(MSS. Wilkinson XLV D. 27: Gardner Wilkinson Papers from Calke
Abby), Bodleian Library, Oxford (courtesy the National Trust)

TRENCH BAS93-E

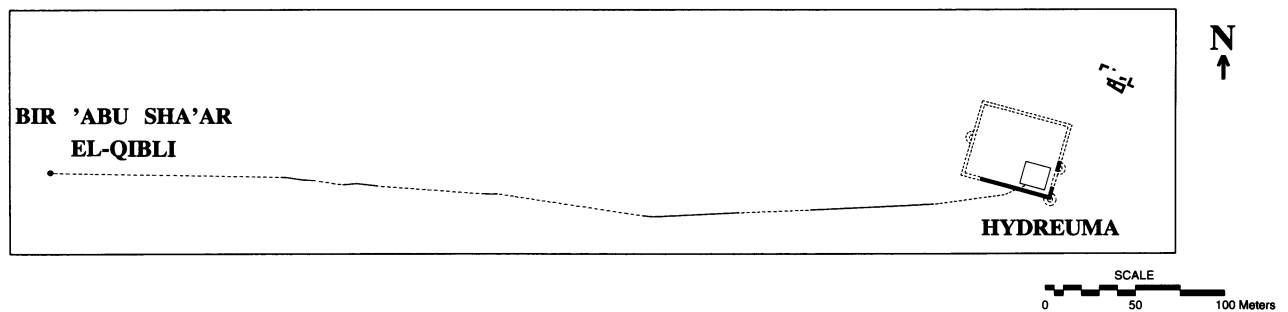


10 Trench BAS93-E

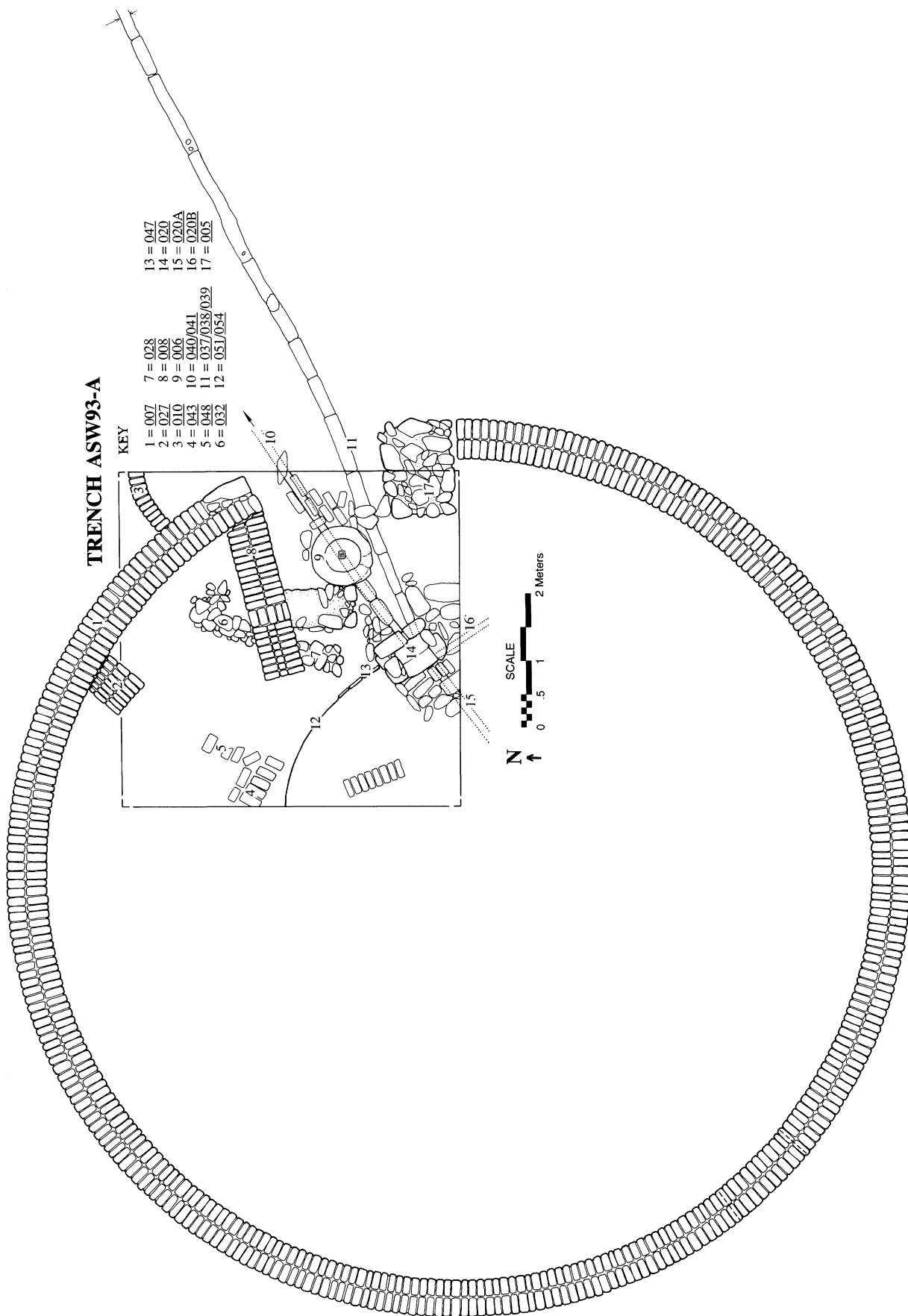


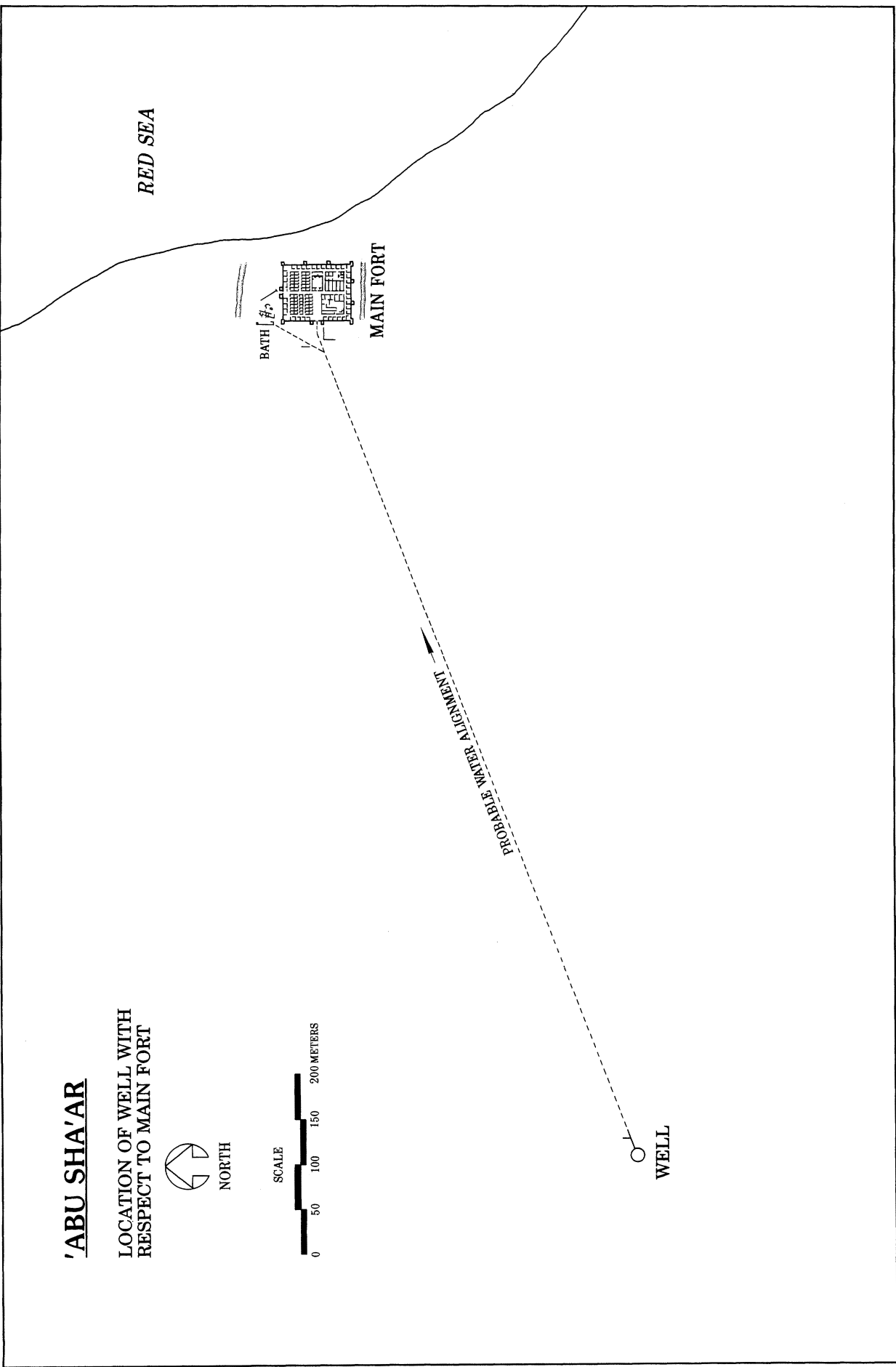
11 Trench BAS93-E and cistern looking northwest

WATER CHANNEL FROM BIR 'ABU SHA'AR EL-QIBLI TO HYDREUMA

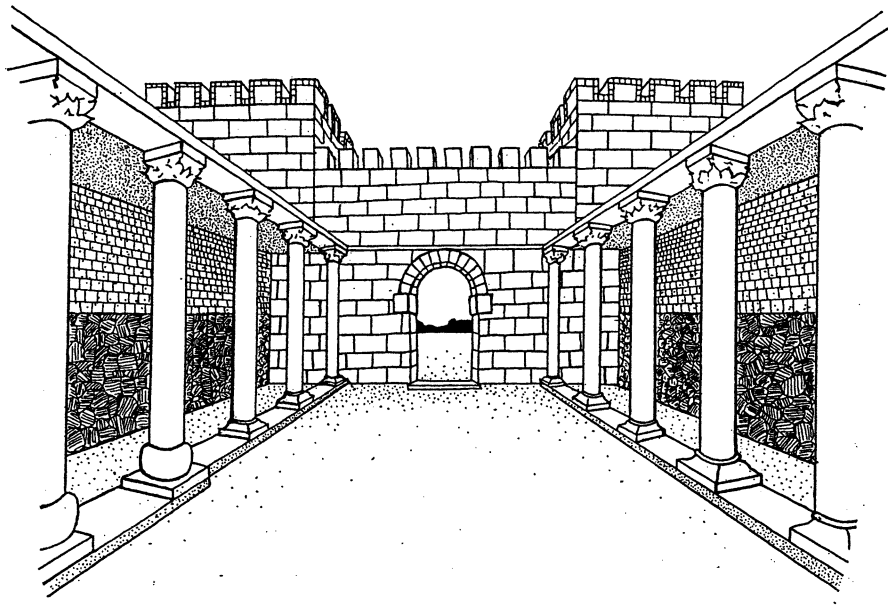


12 Plan of water channel from Bir 'Abu Sha'ar el-Qibli to *hydreuma*

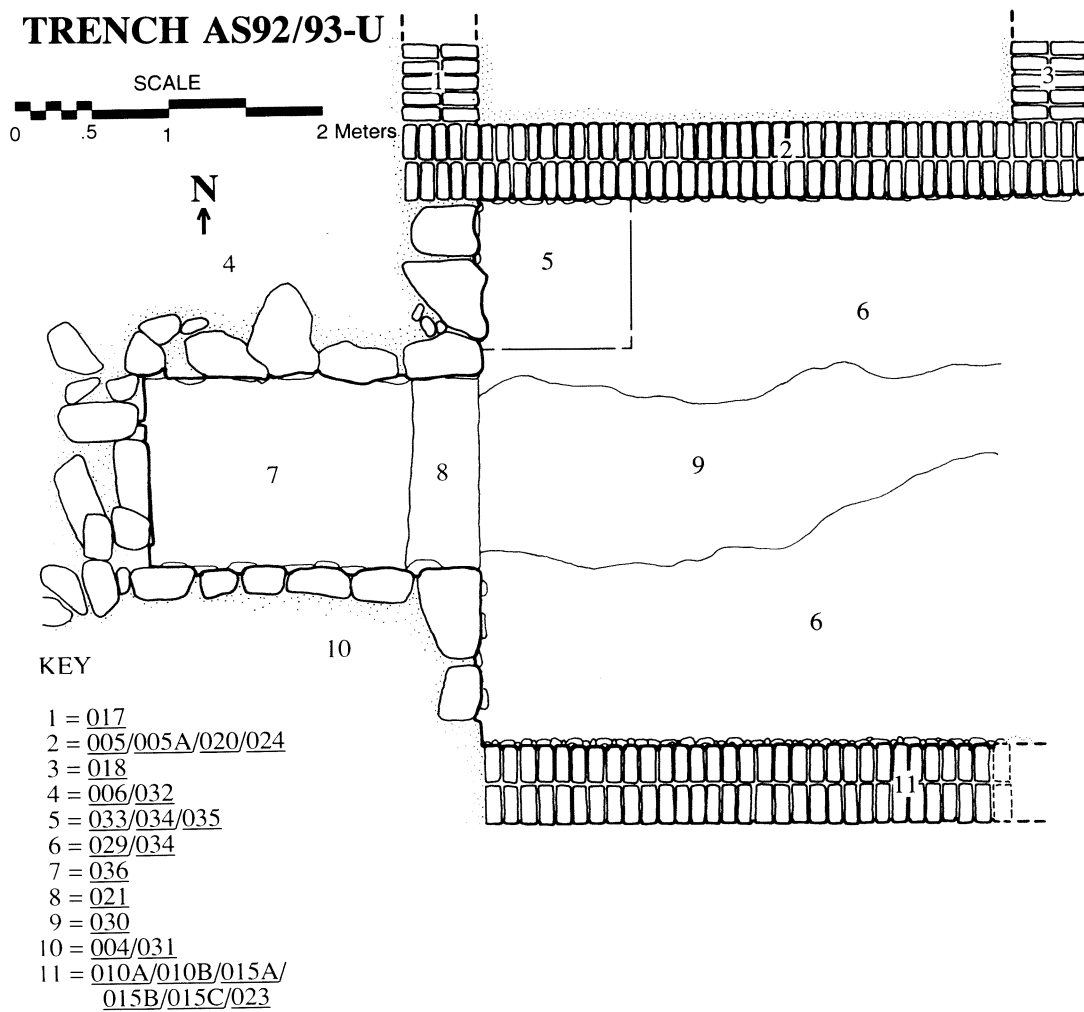




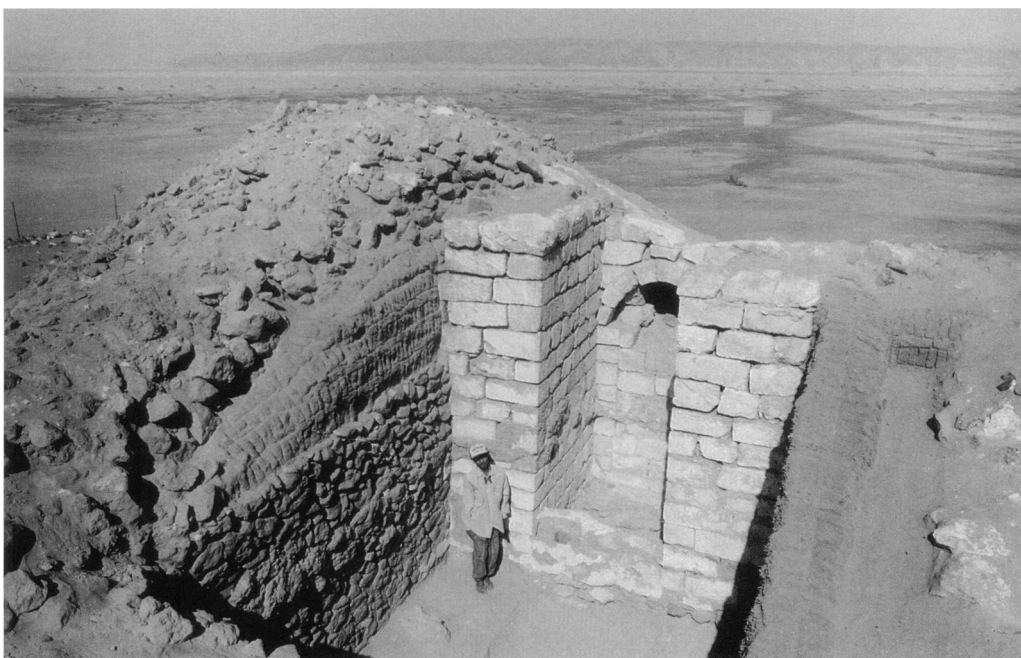
14 Location of 'Abu Sha'ar well in relation to fort at 'Abu Sha'ar



15 Artist's reconstruction of main east-west street inside fort at 'Abu Sha'ar looking west



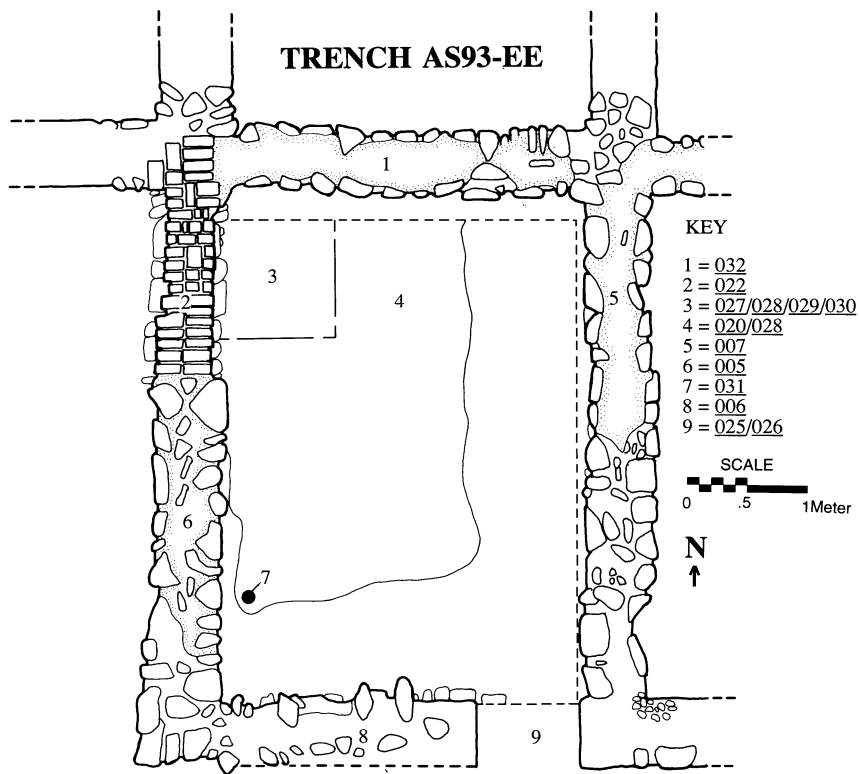
16 Trench AS92/93-U



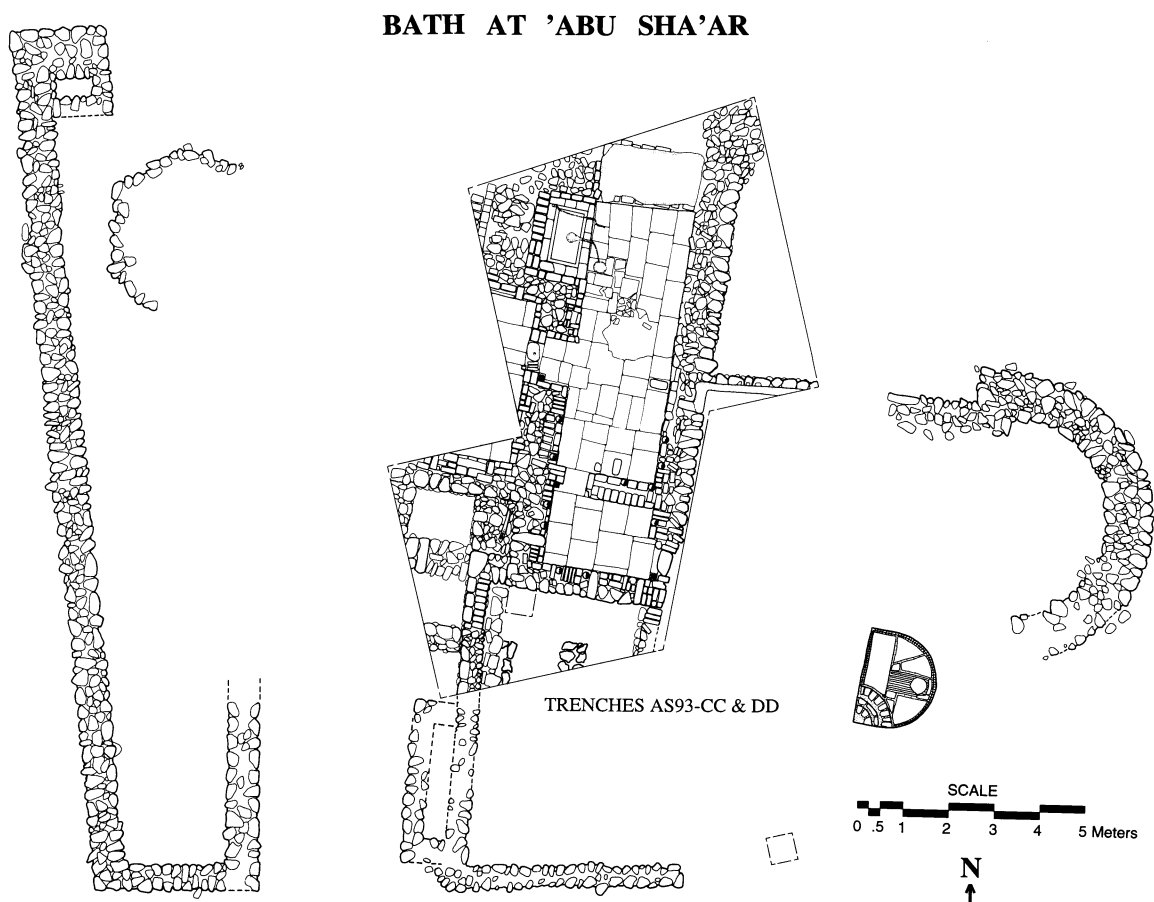
17 Trench AS92/93-U looking southwest



18 Trench AS92/93-U blocked postern looking west



19 Trench AS93-EE

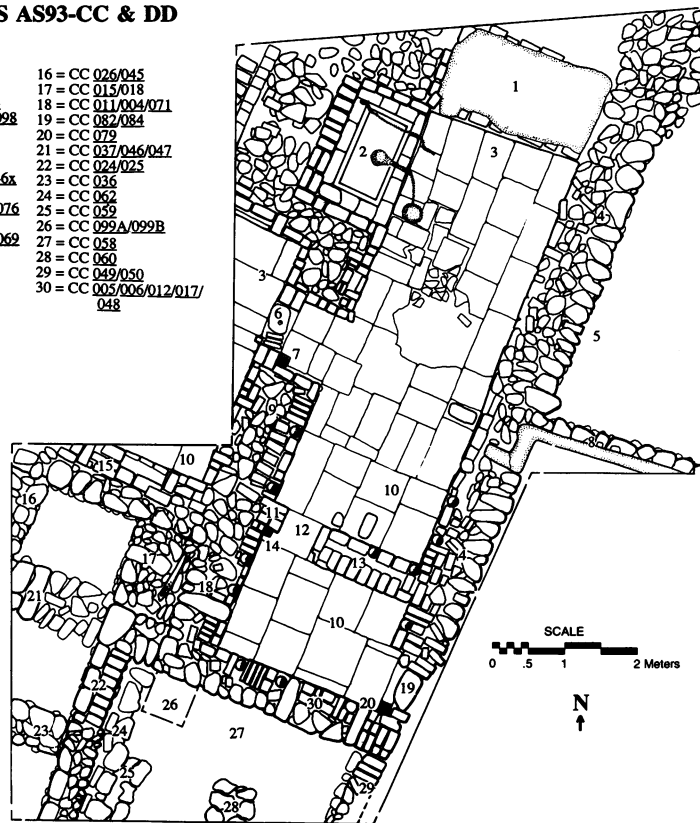


20 Extramural bath at 'Abu Sha'ar

TRENCHES AS93-CC & DD

KEY

1 = DD 019	16 = CC 026/045
2 = DD 002/022	17 = CC 015/018
3 = DD 030/030x/034	18 = CC 011/004/071
4 = DD 001/CC 083/098	19 = CC 082/084
5 = DD 042x	20 = CC 079
6 = DD 033/063	21 = CC 037/046/047
7 = DD 062x	22 = CC 024/025
8 = DD 039x/045x/046x	23 = CC 036
9 = CC 010/063/093	24 = CC 062
10 = CC 033/053/075/076	25 = CC 059
11 = CC 080/093	26 = CC 099A/099B
12 = CC 052/053/068/069	27 = CC 058
13 = CC 016/065/077	28 = CC 060
14 = CC 078	29 = CC 049/050
15 = CC 009/014/094	30 = CC 005/006/012/017/048



21 Trenches AS93-CC & DD



22 Trenches AS93-CC & DD looking southwest



23 Trenches AS93-CC & DD looking northeast

Abutting the north balk, but mainly outside the trench, was a curved wall (032) built of igneous cobbles ca. 4.05 m (centerline of wall) long \times ca. 0.62 m wide \times 0.56 m high. While this remained unexcavated, the balk against which the wall abutted had several loci of heavily burned materials suggesting that this feature was also some type of oven whose precise functions remains unknown. The lowest portions of 032 were, however, at a higher level than oven/kiln 056/057/065/069/071, indicating that it was, possibly, a later structure.

Excavation of a 0.50 m N-S \times 0.75 m E-W \times 0.75 m deep probe in the northeastern corner of the trench (073) beneath the lowest apparent levels of fort habitation (059) produced only sterile beach sand, suggesting no earlier human activity in this area of the fort.

Trench BAS93-C

BAS93-C (Figs. 2, no. 3; 8) was a 5 m \times 5 m trench with a 1 m E-W \times 2 m N-S extension on the southeastern side; it was on the central part of the main east wall of the *hydreuma*. Excavation here was to determine if there was a second gate as indicated on J. G. Wilkinson's sketch of 1823 (Fig. 9). A surface survey and plan drawn of the *hydreuma* in 1987 did not place a gate here,⁷ and excavation in 1993 indicated that, indeed, there was none. The main outer east wall of the fort (006), built of grayish igneous cobbles and boulders, ran continuously through the trench. It was 1.64 m wide \times 0.34 m high. Wall 006 had a semicircular tower (006A) ca. 3.80 m long (N-S) \times ca. 1.00 m maximum width (E-W) abutting on its exterior face. The remnant of an hydraulic installation (016) of cobbles and plaster had been built against this tower. Another hydraulic installation (026/027) against the interior side of the main fort wall lay at the extreme northwestern part of the trench, mostly outside the excavated area.

Excavation revealed a trash deposit in 013/013 E.B. Ex, dated by ceramic evidence broadly to pre-fifth century, which contained more than two dozen ostraca. On paleographic and onomastic grounds, and by reference to the monetary denominations (drachmai and staters), the ostraca dated to the second cen-

tury, probably to the period of Trajan-Hadrian (A.D. 98–138). They were private letters, notifications of receipt of goods, requests to buy items or make payments, etc. Several were addressed to one Niger from a Constans; all except one were in Greek and the one written in Latin was addressed to "Lucius his brother."⁸ The second-century date of the ostraca suggests that the *hydreuma* played a support role on the Via Hadriana, a second-century highway, which passed nearby (see *infra*).

A probe (029) 1.00 m \times 1.00 m \times 1.00 m deep in the northeastern corner of the trench east of fort wall (006) uncovered only sterile sand, indicating no habitation in this area prior to construction of the *hydreuma*.

Trench BAS93-D

BAS93-D (Fig. 2, no. 4) was a 5 m \times 5 m trench east of the fort in what we believed, initially, to be a trash dump. This was sterile and was quickly abandoned.

Trench BAS93-E

BAS93-E (Figs. 2, no. 5; 10–11) was a 9 m E-W \times 5 m N-S trench in the southeastern corner of the *hydreuma*. We cleared areas both to the northwest and west revealing the juncture of the main eastern (019) and southern (003) fort walls. The width of the former was 1.64 m; that of the latter was also 1.64 m. Parts of a corner tower (003A) of indeterminate shape appeared in the southeastern part of the trench; its full dimensions could not be determined as it lay mostly outside the excavation area. Little remained of the superstructures of these walls or of the tower which had suffered apparent water damage. A plaster surface (016) survived north of wall 003 and south of cistern 017 (see *infra*).

BAS93-E and cleared areas adjacent to it revealed part of an extramural water trough in very poor condition, plus, immediately to the west, a completely intact one (008) measuring 2.75 m long \times 0.70 m wide \times 0.50 m deep made of cobbles mortared together and coated on the interior with a fine white waterproof plaster.

⁸Communication from the project epigraphers, Profs. Roger S. Bagnall and Jennifer A. Sheridan.

⁷Sidebotham, et al., "Fieldwork," 147–48.

Parts of a large cistern (017) in the southeastern corner of the *hydreuma* appeared in the northwestern part of BAS93-E. Overall dimensions were 13.95 m E-W \times 13.45 m N-S. The basin itself measured 12.15 m E-W \times 11.40 m N-S with walls of cobbles mortared together. A probe in 032/034/035/036 revealed that the exterior wall of this cistern, at least at its southeastern corner, was battered no doubt to accommodate the immense lateral pressure exerted by water inside the cistern. The cistern had at least three different kinds of mortar with evidence of repair in the northwestern corner. The width of the platform surrounding the cistern varied from 0.92–0.98 m, including a lip at the exterior outer edge of the installation, which averaged 0.27–0.28 m wide \times 0.09–0.10 m high. Neither the original appearance of the bottom of the cistern nor its depth could be ascertained.

The mid-section of the south wall of the cistern preserved a rectilinear shaped platform of cobbles, boulders, and at least one amphora base mortared together, 1.0 m E-W \times 0.95 m N-S \times 0.55–0.60 m high, which we speculated was a platform for a *shadowuf* (BAS93-E *shadowuf*) (Fig. 2, no. 7). It would have moved water from the cistern to troughs abutting the exterior face of the south wall of the fort at its eastern end. There are several apparent parallels for this type of feature elsewhere in the Eastern Desert.⁹ The exterior troughs could have been used by humans, by animals, or for irrigation.

A *sondage* (030) in the southern part of the trench just east of water trough 008 produced only sterile beach sand, suggesting no pre-fort habitation or activity in this area.

WATER PIPELINE AT BIR 'ABU SHA'AR EL-QIBLI

A partially extant water conduit led from Bir 'Abu Sha'ar el-Qibli in the west down to the east towards the *hydreuma* for 476.86 m (Fig. 12). It was made of cobbles mortared together with parts of the original top extant in only a

few places. It had an internal diameter of 0.095–0.108 m. Water flow through the wadi and human activities had destroyed portions of the conduit. About 45 m west of the *hydreuma*, the water channel was no longer preserved. The elevation difference between its highest and lowest extant points was 10.98 m and was certainly originally greater when the now destroyed eastern portion of the conduit is taken into consideration.¹⁰

THE VIA HADRIANA AND BIR 'ABU SHA'AR EL-QIBLI

About 400 m northwest (27° 22.362' N/33° 37.712' E) of Bir 'Abu Sha'ar el-Qibli were the remains of a cleared desert road ca. 21.4–22.6 m wide. This thoroughfare, broken in spots by wadi torrents, could be traced for several km to the north (another segment at 27° 24.281' N/33° 36.857' E).¹¹ At this latter section cairns varying in diameter from 0.70–1.10 m were on both sides of the road at uneven, but close intervals varying from ca. 6.2–10.2 m. Sections of what appeared to be this same thoroughfare (one at 27° 06.121' N/33° 41.557' E was ca. 25.0 m wide) exist much farther south between Hurghada and the *hydreuma* at 'Abu Gariya (26° 56.003' N/33° 43.875' E) where, however, there were fewer cairns.¹² We concluded that these north-south routes must have been parts of the Via Hadriana, a Roman road built by the emperor Hadrian (reigned A.D. 117–138) and celebrated in an inscription dated A.D. 137.¹³ The Via Hadriana joined the Middle

¹⁰These statistics were provided by the project architect, Brian Cannon.

¹¹L. A. Tregenza, *The Red Sea Mountains of Egypt* (Oxford, 1955), 90, notes a section of the Via Hadriana passing between the fort at 'Abu Sha'ar and the *hydreuma* at Bir 'Abu Sha'ar el-Qibli, but indicates that the road went to neither. He provides no detailed descriptions of the thoroughfare.

¹²Tregenza (*ibid.*, 69) also notes the segment of the Via Hadriana near 'Abu Gariya.

¹³The inscription is *IGRRP*² I.1142 = *OGIS* 701; cf. also E. Miller, "Sur une inscription grecque découverte à Cheikh Abad l'ancienne Antinoé," *RA* (1870), 313–18; J. Couyat, "Ports gréco-romains de la Mer Rouge, et grandes routes du Désert Arabique," *CRAI* (1910), 540; J. Lesquier, *L'Armée romaine d'Égypte d'Auguste à Dioclétien* (*Mémoires de la Institut français d'Archéologie orientale* 41) (Cairo, 1918), 436–37; G. W. Murray, "The Roman Roads and Stations in the Eastern Desert of Egypt," *JEA* 11 (1925), 149–50; K. Meister, "Zur Datierung der Annalen des Tacitus und zur Geschichte der Provinz Ägypten," *Erans* 46 (1948), 115, postulates that Trajan initiated construction of the ca. 800 km long road bearing the name of Hadrian who

⁹The author saw a similar feature on the Berenice-Coptos road at a station in Wadi Gerf (ancient Aristonis). Analogous *shadowuf* systems may have existed at Deir el-Atrash and, less likely, at El-Heita on the 'Abu Sha'ar-Nile road; see S. E. Sidebotham, R. E. Zitterkopf, and J. A. Riley, "Survey of the 'Abu Sha'ar-Nile Road," *AJA* 95,4 (1991), 585, 594.

Egyptian city of Antinoë/Antinoopolis (Sheikh Ibada) on the Nile to the Red Sea coast and south to Berenice. It passed by and made use of water at Bir 'Abu Sha'ar el-Qibli and, judging by the ostraca found here (see *supra*), the nearby *hydreuma*.

In the early-mid/late fourth century the *hydreuma* was a satellite installation whose occupants cultivated, using local well water, much of the food consumed by the main garrison of approximately two hundred men at 'Abu Sha'ar.¹⁴ The *hydreuma*'s location and the existence of low stone walls in the vicinity analogous to those used by nearby farmers today to protect their crops from the strong north winds reinforce this interpretation. Cultivators in the area today produce many of the same crops as have been found in the excavations at 'Abu Sha'ar and at the *hydreuma* near Bir 'Abu Sha'ar el-Qibli.¹⁵ It is problematical, however, whether it also continued in the fourth and following centuries as a support facility for the Via Hadriana. Berenice still functioned at that late date and certainly depended on the route to Coptos for communication with the Nile through the early seventh century.¹⁶ Whether Berenice would have continued to rely also on the Via Hadriana from the fourth century on cannot be determined at this point.

Ceramic evidence suggests that the *hydreuma* continued in use in the fifth to seventh centuries. At that time the installation probably produced food consumed by the ecclesiastical occupants of 'Abu Sha'ar.

completed it. D. Meredith, "The Roman Remains in the Eastern Desert of Egypt," *JEA* 39 (1953), 101; Tregenza, *Red Sea Mountains*, 69, 73, 90; D. Meredith, *Tabula Imperii Romani N.G. 36 Coptos* (Oxford, 1958), 7 and map sheet; S. E. Sidebotham, *Roman Economic Policy in the Erythra Thalassa 30 B.C.-A.D. 217* (Leiden, 1986), 61-62; M. Reddé and J.-C. Golvin, "Du Nil à la Mer Rouge: Documents anciens et nouveaux sur les routes du Désert Oriental d'Égypte," *Karthago* 21 (1986-87), 53.

¹⁴ Postulated first by Sidebotham, "Preliminary Report," *JARCE*, forthcoming. For military production of food see R. MacMullen, *Soldier and Civilian in the Later Roman Empire* (Cambridge, Mass., 1963), 1-22.

¹⁵ Sidebotham, "Preliminary Report," forthcoming.

¹⁶ Communication from John A. Riley, based on his analysis of pottery collected by the University of Delaware during surface surveys at Berenice in 1987 and 1992, and on the road between Berenice and Coptos between 1990-93.

THE WATER POINT CA. 1 KM WEST OF THE MAIN FORT AT 'ABU SHA'AR

Earlier seasons of work about 1 km west of the main fort at 'Abu Sha'ar (at 27° 21.915' N/33° 40.424' E) had revealed a water point with terra-cotta pipes. A 5 m × 5 m trench (ASW93-A) (Figs. 3; 13) excavated in 1993 revealed walls and other architectural features associated with the water point. The most important included a circular mud-brick enclosure wall (007) ca. 13 m in diameter and 0.70 m wide. There was a rectangular white gypsum ashlar and fired-brick water-distribution tank (*castellum*) (020) 1.40 m × 1.15 m × 0.70 m high (internal height = 0.53 m in the east and 0.35 m in the west), which had one pipeline leading into it from the southwest (020A) (0.135 m internal diameter) and a rectangular-shaped channel (0.25 m high × 0.092 m wide) from the southeast (020B). These two conduits brought water into the *castellum*.¹⁷ Two other sets of terra-cotta pipes lead northeast away from the *castellum*. One pipeline led to the west gate of the fort at 'Abu Sha'ar and comprised approximately 2,000 lengths of pipe (Fig. 14). This conduit (040/041) was 0.09 m in diameter. The second set leading northeast away from the *castellum* (037/038/039) was 0.10 m in diameter. It bifurcated northeast of the *castellum* and supplied two hydraulic installations composed of fired bricks and mortar just northeast of the water point.¹⁸

Other features included a 0.80-1.10 m N-S × 0.75 m E-W (inside the trench) white gypsum ashlar-on-cobble platform of unknown function in the southeastern part of the trench (005) adjacent to pipelines 037/038/039 and 040/041. There was also a round white gypsum block (0.98 m in diameter × 0.24 m thick) with a square hole in the center (006). It would have been too weak to have sustained any pressure

¹⁷ For discussion of a *castellum* as a water source, see H. Plommer, *Vitruvius and Later Roman Building Manuals* (Cambridge, 1973), 26-28.

¹⁸ Noted earlier by D. Meredith, "The Roman Remains in the Eastern Desert of Egypt," *JEA* 38 (1952), 104, and Tregenza, *Red Sea Mountains*, 107. Both referred to the hydraulic installations as "animal lines." Reported by Sidebotham, "The 1992 Season," 8. Faventinus, *De Diversis Fabricis Architectonicae* 7 [in Plommer, *Vitruvius*, 53] considered earthenware pipes to be the healthiest material for conveying water; Plommer, 28, cites Vitruvius, *De Architectura* 8.6.8, indicating that they were also inexpensive to use.

exerted on it, had it been meant to accommodate some type of lifting device. It is doubtful if it was a column drum reused here in a secondary capacity; all known columns in the fort at 'Abu Sha'ar made of white gypsum were, as far as can be determined, monolithic and had substantially smaller diameters. The discovery of a number of walls and features atop one another (e.g., latest mud-brick walls 007, 008, 010, 027 with 008 atop an earlier cobble wall 028/032, which was approximately perpendicular to it; later kiln-fired brick wall 043 and mud-brick wall 048 atop earlier features) and large quantities of rope and amphora fragments here suggest a great deal of activity with numerous modifications to the water point over time.

The water point seems to have tapped a natural aquifer confined between two impervious clay layers ca. 1.3–1.4 m beneath the sand.¹⁹ Circular-shaped catchment basins (051 the earlier and 054 the later) cut into the thick clay strata captured this water.²⁰ These were augmented by a later curved kiln fired brick wall (047). The water was piped thence to the fort or the hydraulic installations nearby.

THE MAIN FORT AT 'ABU SHA'AR/DEIR UMM DEHEIS

Most work prior to the 1993 season had concentrated on surveying and excavations at the main fort at 'Abu Sha'ar (27° 22.125' N/33° 40.970 E) (Fig. 4). Defensive ditches lay north and south of the fort,²¹ *sabkha* flats to the west; the eastern wall of the fort was only ca. 25–30 m from the Red Sea at high tide. The fort rested on a natural berm of beach sand and pebbles 3.30 m above sea level. The outer fort walls were ca. 77.5 m N-S × ca. 64 m E-W, ca. 3.5–4 m high and ca. 1.5 m thick. There were two main gates: one at the center north wall

and a larger portal at the center west wall; a smaller postern abutted the southwesternmost tower of the fort.²² There were twelve or thirteen quadrilateral towers along the enceinte, two of which flanked the western gate and two the northern. These towers and the two main gates were originally higher than the adjacent fort walls (ca. 5.30–5.33 m).²³ The discovery of white gypsum catapult balls in and around these towers indicated the use of artillery by the defenders.²⁴ The fort interior contained fifty-four barracks (*centuriae*), a headquarters (*principia*)/church, a putative administrative building or commandant's quarters, storage magazines (*horrea*) and a kitchen, food preparation and milling installation east of and adjoining the *horrea*. There were thirty-eight or thirty-nine rooms, used at least partially for storage, abutting the interior fort walls on all four sides. A colonnaded street running E-W connected the west gate to the intersection with the N-S street in front of the entrance to the *principia*/church (Fig. 15).

In 1993, excavation at the main fort at 'Abu Sha'ar concentrated on four areas: (1) the southwesternmost tower of the fort (Trench AS92/93-U); (2) one of the barrack rooms in the northeastern part of the fort (Trench AS93-EE); (3) the bath area north of the fort (Trenches AS93-CC-DD); and (4) in the trash dump north of the fort (Trench AS93-FF), originally partially excavated in 1990 as Trenches AS90-C, F, H, I, J, L, M.

Trench AS92/93-U

The southwesternmost bastion of the fort had been partially excavated in 1992 as AS92-U (Figs. 4, no. 29; 16–18).²⁵ It comprised two towers; the northern one (006/032) had thirteen courses of white gypsum ashlar resting on an igneous cobble base 3.39 m high; the southern one (004/031) had fourteen courses of white gypsum ashlar surviving on an igneous cobble base 3.69 m. high. A jamb (021)

¹⁹Communication from Profs. John A. Seeger and Paul Trotta who cite H. Bouwer, *Groundwater Hydrology* (New York, 1978), fig. 1.2.

²⁰According to Prof. J. A. Harrell of the University of Toledo in a letter of 20 August 1993, the clay of . . . "ASW93-A 054 appears to be a natural, slightly clayey and calcareous sand. . . . There is not enough calcium carbonate for the sample to be concrete or enough clay for it to be a mud brick. The calcite cement could well make the sand sufficiently indurated that it could be cut into blocks at the outcrop."

²¹On defensive ditches, see Vegetius, *Epitoma Rei Militaris*, 1.24.

²²On gates, see *ibid.*, 1.23.

²³On the height of the west gate and south tower flanking the west gate see Sidebotham, "The 1990 Season," 3, ca. 5.30 m; on the height of the north gate and east tower flanking the north gate see Sidebotham, "The 1992 Season," 6, ca. 5.33 m.

²⁴On the catapult balls see Sidebotham, "The 1991 Season," 33; *idem*, "Preliminary Report," forthcoming.

²⁵Reported in *idem*, "The 1992 Season," 4–5.

composed of plaster and igneous cobbles 1.12–1.14 m long (N-S) \times 0.43–0.49 m wide (E-W) \times ca. 0.50 m high joined the two towers on their eastern sides. Abutting 006/032 to the east was a cobble mud-brick wall with patchy white plaster (005/005A/020/024); east of tower 004/031 was another cobble mud-brick wall with patchy white plaster (010A/010B/015A/015B/015C/023) parallel to 005/005A/020/024 and abutting the interior side of the outer southern fort wall. Perpendicular to 005/005A/020/024 and running north outside the trench were two parallel walls. One (017) formed the western end of the next room north of AS92/93-U and 018 the eastern end. Remnants of a green-olive-yellow clay floor from the ecclesiastical period (see *infra*) (028A/028B, removed by excavation) were found both east and west of jamb 021. Beneath 028A (east side of jamb 021) were patchy remains of a white plaster floor (029/034) dating from the military occupation (see *infra*), but this floor was not found west of jamb 021. There the green-olive-yellow clay floor (028B) rested directly upon cobbles (036). Between the end of the 1992 season and the beginning of the 1993 season, the western balk between 004/031 and 006/032 partially collapsed revealing an arched entrance which had been blocked in antiquity. This postern was about 0.83 m wide and had been permanently closed using white gypsum ashlar blocks at some indeterminate point in antiquity. An ancient robber trench or pathway worn through the flooring (030) cut through the area east of 021. A 1.0 m \times 1.0 m \times 1.0 m deep probe (033/034/035) in the northwestern corner of the trench abutting tower 006/032 and the cobble and plaster portions of wall 005/005A/020/024 revealed sterile beach sand suggesting no earlier habitation in this area of the fort.

Trench AS93-EE

AS93-EE was a 3 m E-W \times 4 m N-S trench in one of the rooms of the northeast barracks (Figs. 4, no. 38; 19). AS93-EE comprised most of the western wall of the room built of grayish igneous cobbles and small white gypsum chunks with remnants of a mud-brick wall atop the northern end (005/022). The area east of this wall at the extreme northern end of the room remained unexcavated. Other features

were the southern wall of the room (006), the outer (southern) face of which lay outside the trench. The entrance to the barrack (025/026) was at the eastern end of the southern wall abutting the eastern wall (007) of the barrack. This latter wall, built of grayish cobbles and white gypsum chunks, remained unexcavated as did the northern barrack wall (032). A similar pair of rooms excavated in 1990 in the northwest barracks (AS90-G)²⁶ revealed no ecclesiastical occupation or remodelling/repair, and we speculated that the Christians might have used, instead, the northeastern barracks as living quarters.

AS93-EE, however, produced no evidence of postmilitary use of the room. There was a small quantity of pottery and additional finds, but no roofing material—atypical of most trenches excavated inside the fort—was found there suggesting that it had been removed in antiquity. This would probably not have occurred during the military phase when such rooms were occupied, but might have taken place in the subsequent ecclesiastical period when the room was no longer used. Perhaps fort occupants at that time removed the roofing material for use elsewhere inside the fort. The only floor was very fragmentary, about 0.05 m thick, of white plaster (AS93-EE 020/028) similar to others found in previous seasons inside the fort dating to the military phase. In the southwestern part of the room was a cylindrical wooden peg (031) driven into the white plaster floor, similar to pegs found in the white plaster floor inside the *principia*/church (cf. AS91-O 051–052).²⁷ Its function could not be determined. Excavation of a 1.0 m \times 1.0 m \times ca. 0.84 m deep probe beneath this floor in the northwestern corner of the trench (027/028/029/030) encountered only sterile beach sand; there was no evidence of earlier occupation. Given the small areas of both the northwestern (AS90-G) and northeastern barracks (AS93-EE) that we excavated, we could neither prove nor disprove that they were used by later Christian occupants of the fort at 'Abu Sha'ar; we did show, however, that there was no Christian occupation of those particular rooms.

²⁶Idem, "The 1990 Season," 3–4.

²⁷Idem, "Preliminary Report," forthcoming.

Trenches AS93-CC and DD and Extensions

Most work at 'Abu Sha'ar in 1993 concentrated on the extramural bath (Figs. 4, nos. 5, 37; 20–23), identified as such as early as 1987.²⁸ Excavation was to determine if the bath had Christian ecclesiastical as well as Roman military use, and, if so, what that later ecclesiastical function might have been. We speculated in 1992 that the bath might have continued in use in the ecclesiastical period, in part, as a baptistry. Although not architecturally connected to the church inside the fort, early Coptic baptistries were often physically separated from the churches they served. The pre-existing Roman military bath would have offered the perfect installation for a baptistry.²⁹

Overall bath dimensions were ca. 18 m N-S × ca. 22.8 m E-W, although we excavated only two trenches (AS93-CC and AS93-DD) with extensions totaling ca. 58 m². Main exterior bath walls were of stacked gray igneous cobbles, interior walls of kiln-fired brick plastered on the faces with inner cores of gray igneous cobbles. Circular corrugated terra-cotta pipes (*tubuli*) running vertically up the interior bath walls from beneath the hypocaust heated the rooms.³⁰ Maximum preserved height of the interior bath walls was 1.52 m. There were two large rectangular basins, one in the north-western part of AS93-DD (002/022) and the other in the northern end of AS93-DD (019).

²⁸Sidebotham, et al., "Fieldwork," 145–46.

²⁹Reported in Sidebotham, "The 1992 Season," 7–8; T. Kraus, et al., "Mons Claudianus-Mons Porphyrites Bericht über die zweite Forschungsreise 1964," *MDIK* 22 (1967), 129–32 note a parallel bath outside the fort at Mons Claudianus; see 171 for the bath at Mons Porphyrites. For other baths associated with Roman forts in Egypt, see U. A. Wareth and P. Zignani, "Nag Al-Hagar A Fortress with a Palace of the Late Roman Empire Second Preliminary Report," *BIFAO* 92 (1992), 199–201 (inside the fort at Nag al-Hagar) and notes 56–59 (for both civilian and military parallels elsewhere in Egypt). See also J. Schwartz, et al., *Fouilles Franco-suissees Rapports II Qasr Oârin/Dionysias* 1950 (Cairo, 1969), 9 and plan 1; M. Abd el-Maqoud, "Preliminary Report on the Excavations at Tell El-Farama (Pelusium) First Two Seasons (1983/4 and 1984/5)," *Annales du Service des antiquités d'Égypte* 70 (1984–85), 4–5 (at Pelusium).

³⁰For a discussion of *tubuli*, see Seneca, *Ad Lucilium Epistulae Morales* 90.25: "... suspensuras balnearum et inpressos parietibus tubos, per quos circumfunderetur calor, qui ima simul ac summa foveret aequaliter." These *tubuli* were normally square or rectangular; on baths and bathing in general in late antiquity, see F. Yegül, *Baths and Bathing in Classical Antiquity* (New York, Cambridge, Mass., London, 1992), 314–49.

The hypocaust floor (maximum dimensions in the trenches: 7.57 m N-S × 2.1–2.2 m E-W) was made of beautifully cut white gypsum slabs³¹ of uneven dimensions varying from 0.10 m × 0.49 m to 0.45 m × 1.08 m × 0.04–0.055 m thick (AS93-CC 033/053/075/076, AS93-DD 030/030x/034) sealed with plaster above and beneath; these white gypsum flagstones appeared in four rooms excavated inside the bath. Beneath the plastered limestone slabs were large fired bricks (*bipedales*) ca. 0.56 m × 0.65.5 m × 0.085 m³² and additional layers of clay and plaster (total thickness 0.29 m), all ultimately resting on cross walls made of fired brick of unknown height.³³ The traditional *suspensurae* hypocaust substructure seems to have been replaced by long cross walls.³⁴ Although not visible to the excavators, small portals undoubtedly pierced these sub-floor cross walls to allow hot air to circulate.

The center of the hypocaust floor in the largest room (in AS93-DD) had been badly damaged and partially collapsed due to the fall of nearby walls from the west toward the east. The fallen walls must have tumbled with tremendous force to have caused such destruction.

A fired-brick arch-shaped stoke hole (*fornix*) (AS93-DD 042x) for the furnace (*praefurnium/propnigium*)³⁵ pierced the eastern wall of the bath and led beneath the hypocaust floor. A large quantity of rather thin transparent window-pane glass was recovered from both AS93-CC and AS93-DD, indicating that the structure originally had windows.³⁶ It is highly

³¹Prof. J. A. Harrell of the University of Toledo in a letter of 20 August 1993 noted that the white stone forming the surface of the hypocaust floor was "a fibrous variety of gypsum known as 'satin spar' . . . [It] is also a common form of gypsum and I would expect it to occur along the Red Sea coast."

³²On *bipedales*, see Vitruvius, *De Architectura* 5.10.2; Yegül, *Baths and Bathing*, 357, notes that *bipedales* were approximately 0.60 m square. The author saw similar sized kiln-fired "*bipedales*" bricks in a small bath just south of the main *castellum* (fort) in the Wadi Ma'amal at Mons Porphyrites on 30 July 1993. On this, see Kraus, "Mons Claudianus-Mons Porphyrites," 171.

³³Faventinus, *De Diversis Fabricis Architectonicae* 16, records pillar heights in private baths as 2.5 ft and in public baths as 3 ft [cf. Plomer, *Vitruvius*, 15–16, 63–64, and Yegül, *Baths and Bathing*, 357].

³⁴For a description of *suspensurae*, see Vitruvius, *De Architectura* 5.10.2.

³⁵Ibid.

³⁶Cf. discussion in Yegül, *Baths and Bathing*, 39, 382–83 on bath windows.

unlikely that these windows faced north or east; they would surely have been destroyed by the strong prevailing northern and northeastern winds had that been the case.³⁷ More likely, these windows faced south and/or west away from the winds. Several parts of the southern (AS93-CC 005/006/012/017/048) and western walls (AS93-CC 010/064/011/004/071) preserved white gypsum blocks set perpendicular to the wall lines, suggesting that those locations had openings. That white gypsum blocks were used elsewhere in the fort to mark portals of various types suggested that their presence in the bath—in capacities clearly not related to doorways—may have been as windows.

Evidence could be found both outside the bath and inside for several different periods of use. Outside to the south, west, and east were later walls of unknown purpose (AS93-CC-015/018, 026/045, 037/046/047, 036, 024/025, 049/050, 062, 059, 060, AS93-DD 039x/045x/046x) built up against the original bath walls (AS93-CC-009/014/094, 010/064/093, 011/004/071, 080/093, 005/006/012/017/048, 016/065/077, 083/098/AS93-DD 001); some of these walls were even later, built against earlier post-bath period walls. We detected at least four phases here, but could not determine when these modifications took place. Inside the bath itself were two blocked doorways (AS93-CC 052/053/068/069, AS93-CC 082/084) and a doorway with a threshold block added later (AS93-DD 033/063). Each of the three doorways had quadrilaterally shaped pivot holes (062x, 078, 079) preserving wood. These doorways plus burning on several areas of the hypocaust floor (AS93-CC 072, AS93-DD 018, removed by excavation) and later channels cut into the hypocaust floor and adjacent installations (AS93-DD 002/022/030) suggest multiple phase use of the bath and not always, apparently, as a bath.

The northeast pivot block from the north gate of the fort (Trench AS92-W) had been discarded in AS93-CC 008 (removed by excavation) after military abandonment of the area. According to pottery found associated with the pivot block, this occurred between the fourth and early fifth centuries.

³⁷For the strong north winds in the Red Sea, see R. E. Zitterkopf and S. E. Sidebotham, "Stations and Towers on the Quseir-Nile Road," *JEA* 75 (1989), 156, note 7.

We found a number of ostraca and four coins in the bath area. The ostraca and two of the coins came from a trash deposit (AS93-DD 038x/044x/048x/049x/053x, removed by excavation) abutting the exterior face of the eastern wall of the bath (AS93-DD 001/AS93-CC 083/098) and the stoke hole (AS93-DD 042x). Dating of the ceramics and the two coins (both of Constantine I of the years 327/328–333/335)³⁸ suggested deposition of the trash here in the mid-late fourth/early fifth century. Ostraca were also recovered from this trash deposit, but were too worn to date.³⁹ The trash was placed in such a way that the stoke hole of the hypocaust was blocked and could no longer have been used. This suggests that at least the heated part of the bath no longer functioned in the mid-late fourth/early fifth century. Earlier seasons of excavation had determined that the Roman army had abandoned the fort before the late fourth/early fifth century, and this dump east of and adjacent to the stoke hole of the hypocaust reinforces that conclusion.

Excavation in the bath area in 1993 recovered pottery indicating postmilitary (i.e., ecclesiastical) activity here between the mid-late fourth/early fifth to mid-fifth century, and, perhaps, later, but could not determine precisely what that activity entailed.

³⁸The coins were (from AS93-DD 044x) an *Æ* follis of Constantine I (327/328–330); Obverse: CONSTANTINVS MAX AVG, diademed bust right, diameter 19.8 mm, die positions: ↑↖; Reverse: CONSTANTINIANA DAFNE, in exergue CONS (Constantinople mint), Victory seated left on cippus, head right, holds laurel and palm branch, Nike figure in left hand, bound kneeling captive at feet of Victory to left, Roman military trophy left of Victory and behind captive, B [second officina] in field to left. Cf. P. M. Bruun, *The Roman Imperial Coinage*, vol. VII: *Constantine and Licinius A.D. 313–337*, ed. C. H. V. Sutherland and R. A. G. Carson (London, 1966), 574, no. 32; P. V. Hill, J. P. C. Kent, and R. A. G. Carson, *Late Roman Bronze Coinage A.D. 324–498* (London, 1978), I, 24, nos. 989–995; cf. discussion in Bruun, *Roman Imperial Coinage*, 563, 566, 567, 568; R. S. Speck and S. M. Huston, *Constantine's Dafne Coinage at Constantinople* (San Francisco, 1992), *passim*. The other coin (from AS93-DD 038x) was an *Æ* 3/4 of Constantine I (333–335); Obverse: CONSTANTINVS MAX AVG, laureate bust right, diameter 17.1 mm, die positions: ↑↘; Reverse: GLORIA EXERCITVS, in exergue SMALE (Alexandria mint), two soldiers standing facing each other, each holds reversed spear and leans on shield; they stand either side of two standards. Cf. Bruun, *Roman Imperial Coinage*, 711, no. 58; Hill, et al., *Late Roman Bronze Coinage*, I, 32, no. 1428 variant mint mark. For a discussion of the type, see Bruun, *Roman Imperial Coinage*, 700, 701. John A. Riley provided the dates for the ceramics of this deposit.

³⁹Communication from Jennifer A. Sheridan.

Two parallel walls (059 and 060) at a very low level in the extreme southern end of AS93-CC protruding from the southern balk had a patchy white plaster surface (058) associated with them; their relationships to one another, however, could not be determined. These features may have predated the bath, but dearth of associated diagnostic pottery precluded determination of a precise chronological relationship between these walls, the white plaster floor, and the bath. Likewise, no functional relationship among these features could be ascertained.

A 0.60 m × 0.60 m × 0.75 m deep probe (AS93-CC 099A-B) south of bath wall AS93-CC 005/006/012/017/048 and east of and at a lower level than gypsum wall AS93-CC 062 revealed only sterile beach sand, suggesting no earlier occupation of this part of the site.

We could not determine the type of fuel used to heat the bath.⁴⁰ We presume that water was piped in from the hydraulic installation about 1 km to the west, although we found no water pipes leading to the bath itself; it is doubtful that sea water would have been used.

Trench AS93-FF

AS93-FF (Fig. 4, no. 39) was a 2 m E-W × 2.5 m N-S trench in the southwestern corner of the extramural trash dump north of the fort, which we initially excavated in 1990 (AS90-C, F, H, I, J, L, M). The purpose for its excavation was to recover additional faunal material for study. The trench, however, reached sterile beach sand quickly and produced few finds.

EASTERN DESERT SURVEY

Continued survey work in the Eastern Desert ranging from 'Abu Sha'ar southwest to the Nile at Kainopolis (Qena) and south to Berenice⁴¹ included collection of surface pottery for

dating, photography, pinpointing locations of previously known as well as a dozen newly discovered sites using the Magellan Global Positioning System,⁴² sketching, and measuring. Future survey work will concentrate on drawing measured plans of installations. Given the rapid destruction of and damage to many of the desert sites by human activity we felt it was imperative to record as much as possible about them before any additional ravages occurred.

CONCLUSION

The results of fieldwork in 1993 reinforced conclusions reached in previous seasons regarding the general history of the main fort at 'Abu Sha'ar. The monumental Latin inscriptions from the west gate found in 1990 revealed that a mounted unit styled the *Ala Nova Maximiana* garrisoned the installation,⁴³ founded in A.D. 309–311, during the joint reigns of the emperors Constantine I, Licinius I, Maximinus II, and Galerius, while Aurelius Maximinus was governor of the Thebaid.⁴⁴ The number and size of the barracks inside the fort suggested a unit of approximately two hundred men.⁴⁵

This foundation date and military use were corroborated by finds (mainly ceramic and numismatic) from the extramural trash dump excavated in 1990, an ostrakon recording a duty

botham, "Ship Graffiti from Mons Porphyrites," *BIFAO* 90 (1990), 339–45; S. E. Sidebotham, "A *Limes* in the Eastern Desert of Egypt: Myth of Reality?" in *Roman Frontier Studies 1989: Proceedings of the XVth International Congress of Roman Frontier Studies*, ed. V. A. Maxfield and M. J. Dobson (Exeter, 1991), 494–97; Sidebotham, et al., "Survey," 571–622; S. E. Sidebotham, "Römische Straßen in der ägyptischen Wüste," *Antike Welt* 22, 3 (1991), 177–89.

⁴²On the Global Positioning System, see note 2.

⁴³We are uncertain whether the *ala* was a dromedary or cavalry unit. Given the location, however, and substantial quantities of camel dung found in the excavations, it was probably a dromedary unit. For a Palmyrene dromedary unit at Coptos earlier in the third century, see *OGIS* 639 = *IGRRP*² I.1169 = *Sammelbuch griechischer Urkunden aus Ägypten* 8810 of A.D. 216: see, also, M. P. Speidel, "Palmyrenian Irregulars at Koptos," *Bulletin of the American Society of Papyrologists* 21 (1984), 221 and 222–24, for another possible Palmyrene unit at Coptos.

⁴⁴Sidebotham, "The 1990 Season," 2–3; idem, "Preliminary Report"; Bagnall and Sheridan, "Documents," indicate a possible restoration of part of the inscription as "[re]st[itu]endi," suggesting that the fort was repaired/ restored. Yet there is little archaeological evidence that would indicate an earlier structure at the site.

⁴⁵Sidebotham, "Preliminary Report."

⁴⁰For fuel for baths see B. Meyer, "Problèmes du combustible dans les bains publics de l'Égypte grecque et romaine," in *Egitto e storia antica dall'Ellenismo all'età araba bilancio di un confronto: Atti del Colloquio internazionale Bologna, 31 agosto–2 settembre 1987*, ed. L. Crisculo and G. Geraci (Bologna, 1989), 565–71.

⁴¹For previous survey work in the Eastern Desert by the author see Zitterkopf and Sidebotham, "Stations and Towers," 155–89; S. E. Sidebotham, "Lure of the Desert Road," *Archaeology* (July/August, 1989), 58–60; S. E. Side-

roster⁴⁶ from the *principia* also found in 1990 and ceramics and coins from various trenches excavated over the seasons.⁴⁷ A road linked the fort with the Nile at Kainopolis (Qena) and, ultimately, with the parent camp at Luxor.⁴⁸ Perhaps the existence of this road and its various stops and stations (which had, in the first-early fourth centuries supported quarry operations at Mons Porphyrites), together with the presence of a small *hydreuma* near Bir 'Abu Sha'ar el-Qibli since the early second century, swayed officials looking for a potential fort site along the Red Sea coast to the logistical advantages of 'Abu Sha'ar. Roman authorities would not have had to build a new road infrastructure from 'Abu Sha'ar to the Nile, but merely modify an existing communication artery.

Exactly how long the military remained at 'Abu Sha'ar cannot be determined, but it seems to have abandoned the fort before the late fourth/early fifth century. Mid-late fourth/early fifth century trash deposits both inside the fort in various buildings, rooms, and streets, and that found just east of and abutting the stoke hole of the furnace of the extramural bath (Trench AS93-CC 038x/044x/048x/049x/053x), indicate that the military phase of the structures in which or with which these trash deposits were associated no longer operated in their original capacity at that time.⁴⁹ Thus, a broad terminus ante quem date for military abandonment of the main fort at 'Abu Sha'ar is the late fourth/early fifth century, although a date earlier in the fourth century, perhaps by the middle or third quarter of the fourth century (based on the numismatic finds: latest in the fourth century are 327/328–341), is possible.⁵⁰

Numerous *sondages* sunk below the earliest

military period white plaster floors/habitation levels in buildings inside and outside the fort in trenches excavated over the years revealed no pre-fort occupation of the site.⁵¹ Indeed, none of the artifacts, except for a small number of blue frit-ware fragments typically dated first-second century, which seem to be "residual pieces" and some (possibly prehistoric) lithics, suggested any activity in the area immediately around the fort prior to the early fourth century.

The second period of fort occupation post-dates the mid-late fourth/early fifth century. The aforementioned trash deposits dating mid-late fourth/early fifth century indicate re-occupation by that date of parts of the fort, though clearly on a smaller scale than was the case during the military phase.

This second period of fort use was by Christians who repaved floors with green-olive-yellow clay. Several major Christian artifacts found in the *principia*/church including a Christian inscription in Greek (fourth-sixth century), an elaborate cross embroidered on cloth, adult human male (?) bones wrapped in cloth found in front of the apse suggesting the cult of a martyr, and a lengthy papyrus (fifth century) from the Christian period attest to this.⁵² Elaborate Christian inscriptions found carved onto an impost block of the north gate and voussoirs over that portal, together with dozens of crosses and personal name graffiti, attest the site's importance as a pilgrimage center in that later period, too.⁵³ The relative dearth of Christian epigraphic evidence from the west gate—the principal entrance in the military period—indicates that it was not the main portal in the later ecclesiastical phase; clearly the north gate served in that capacity.

Ceramic evidence, though slight, suggests that the ecclesiastical phase of the fort's use continued into the late sixth or early seventh centuries. A single *aes* coin of the period 527–610 found on the surface of the site reinforces this dating.⁵⁴ Thereafter, diagnostic ceramic

⁴⁶On the duty roster, see Bagnall and Sheridan, "Documents."

⁴⁷See above, note 44. Publication of the coins will appear in the final report.

⁴⁸Sidebotham, et al., "Survey," passim.

⁴⁹For discussion of trash dumps inside the fort, see Sidebotham, "The 1991 Season," 33–34, and idem, "Preliminary Report."

⁵⁰Full publication of the coins by S. E. Sidebotham will appear in the final report. Breakdown of the twenty-seven ancient coins recovered during the five seasons of work at the site was as follows: (1) one effaced coin, probably of the mid-late third century; (2) sixteen coins of the period ca. 293–311; (3) four effaced coins, probably of the period ca. 293–311; (4) five coins of the period 327/328–341; and (5) one coin of the period 527–610.

⁵¹For the location of these *sondages*, see Sidebotham, et al., "Fieldwork," 142; Sidebotham, "The 1991 Season," 34; idem, "Preliminary Report."

⁵²Idem, "The 1990 Season," 4–5; idem, "The 1991 Season," 32; Bagnall and Sheridan, "Documents."

⁵³Sidebotham, "The 1992 Season," 6.

⁵⁴For ceramic dates: communication from J. A. Riley and Riley in Sidebotham, et al., "Fieldwork," 149–61. For

evidence ceases and we must assume that this represents abandonment of the installation. The road joining the fort to the Nile continued in use in the ecclesiastical period as is clear from the evidence of a recent survey of that thoroughfare.⁵⁵

There is some indication of occasional use of the fort by passing travelers in the form of camp fire remains at various post-ecclesiastical levels,⁵⁶ but there was clearly no permanent, long-term occupation of the fort by large numbers of people after the ecclesiastical period (late sixth/early seventh century).

The occupation of the small fort at Bir 'Abu Sha'ar el-Qibli is slightly more problematical. Here there seem to have been at least three phases of occupation beginning in the early second century as a support facility on the Via Hadriana. The discovery of more than two dozen ostraca in Trench BAS93-C 013/013 E.B. Ex of the early second century provide dated evidence for this earliest use.⁵⁷ It is unclear how long the *hydreuma* functioned as a road station on the Via Hadriana after the early second century and whether its occupation continued uninterrupted until the second clearly identifiable period of occupation in the fourth century during the installation's association with the then recently constructed fort at 'Abu Sha'ar. The last phase was in the mid-late fourth/early fifth-late sixth/seventh centuries when, again, the *hydreuma* seems to have functioned as a support facility for activities at 'Abu Sha'ar. Datable artifacts recovered from the survey and excavations in this area included ceramics which were contemporary with those found at the main fort at 'Abu Sha'ar, viz. fourth-late sixth/seventh centuries—suggesting that the two installations were operationally interdependent at that time.

A noteworthy feature of the small *hydreuma* was the large number of hydraulic tanks and troughs both inside the fort as well as abutting the exterior fort walls which undoubtedly had multiple uses for humans, animals, and irrigation of crops.

Both the fort at 'Abu Sha'ar and the smaller *hydreuma* near Bir 'Abu Sha'ar el-Qibli played several roles in the later period. Epigraphic evidence from the Latin inscriptions found at the north gate at 'Abu Sha'ar in 1990 clearly indicated that at least 'Abu Sha'ar and, possibly, the *hydreuma* served as part of the *limes* in the early fourth century joined to the parent camp at Luxor via Kainopolis by road.⁵⁸ The term "MERCATOR" in those texts, while odd on official records of that type, suggests that the forts at 'Abu Sha'ar and near Bir 'Abu Sha'ar el-Qibli may have played a role in the commerce of the region; whether that would have been local, regional or more "international" in scope cannot be determined.⁵⁹ The role of 'Abu Sha'ar in the trade may have been, in part, as a support facility for maritime traffic passing to and from Clysma (near Suez), a port known to have been active in Red Sea commerce at that time.⁶⁰

After abandonment by the military, sometime prior to the late fourth/early fifth century, the fort at 'Abu Sha'ar was transformed into a Christian ecclesiastical center⁶¹ and, most

⁵⁵Sidebotham, "The 1990 Season," 6; idem in Maxfield and Dobson, *Roman Frontier Studies*, 494–97; idem, "Preliminary Report"; Bagnall and Sheridan, "Documents."

⁵⁶Sidebotham, "A Roman Fort," 8; idem, "Preliminary Report"; Bagnall and Sheridan, "Documents."

⁵⁷For Clysma in this later period, see J. Maspero, *Organisation militaire de l'Égypte byzantine* (Bibliothèque de l'École des Hautes Études, fasc. 201) (Paris, 1912), 11, 20; C. Bourdon, *Anciens canaux, anciens sites et ports de Suez (Mémoires de la Société royale de Géographie d'Égypte)* (Cairo, 1925), 65–66, 71–72; B. Bruyère, *Fouilles de Clysma-Qolzoum (Suez) 1930–1932 (Fouilles de l'Institut français d'Archéologie orientale 27)* (Cairo, 1966), passim; D. Letsios, *Byzantium and the Red Sea Relations with Nubia, Ethiopia and South Arabia until the Arab Conquest* (Historical Monographs 5) (Athens, 1988), 65, 192; P. Mayerson, "The Island of Iotabê in the Byzantine Sources: A Reprise," *BASOR* 287 (1992), 4, note 4; idem, "A Confusion of Indias: Asian India and African India in the Byzantine Sources," *JAOS* 113, 2 (1993), 174; J. Wilkinson, trans., *Egeria's Travels* (London, 1971), 205–7; Clysma also appears in the *Itinerarium Antoniniana* 170.4 [see *Itineraria Romana*, vol. 1, *Itineraria Antonini Augusti et Burdigalense*, ed. O. Cuntz (Stuttgart, 1990), 23].

⁶¹For possible examples elsewhere in Egypt, see A. J. Butler, *The Arab Conquest of Egypt and the Last Thirty Years of the Roman Dominion*, ed. P. M. Fraser, 2nd rev. ed. (Oxford, 1978), 238–74, for fortress Babylon; M. Mustafa and H. Jaritz, "Roman Fortress at Nag' El-Hagar First Preliminary Report," *Annales du Service des antiquités d'Égypte* 70 (1984–85), 27–29, a fort northeast of Aswan; P. Grossmann and H. Jaritz, "Ein Besuch in der Festung von Qal'at al Babên in Oberägypten," *MDIK* 30 (1974), 199–214, a fort about 20 km south of Edfu on the Nile; for a fort built around an earlier church see P. W. Schienerl, "The Church Within the Christian Fortress at Nag' Esh Sheima

the coin, see *ibid.*, 144. Full publication of both the numismatic and ceramic evidence will appear in the final report.

⁵⁵Sidebotham, et al., "Survey," passim.

⁵⁶E.g., Sidebotham, "Preliminary Report."

⁵⁷Communication from Bagnall and Sheridan in September 1993.

likely, a way station for travelers/pilgrims journeying from Upper Egyptian centers in the Nile valley to other Christian centers in the Eastern Desert (Monasteries of St. Paul, St. Anthony, St. Catherine's in Sinai, or to the holy land itself by sea via Aila/Aqaba).⁶² Conversely, but less likely, 'Abu Sha'ar may have assisted Christian pilgrims traveling from other parts of the eastern Roman Empire and the Sassanian Empire in visiting holy sites in Egypt.⁶³ During the fourth-century military occupation, it is possible that the small *hydreuma* and, to a lesser extent, the large fort at 'Abu Sha'ar also aided traffic on the Via Hadriana, but we are uncertain about the continued use of that thoroughfare then and later, even though its terminal point on the Red Sea, Berenice, was still inhabited at that time.⁶⁴ What relationship, if any, the ecclesiastical occupants of 'Abu Sha'ar and presumably those of the small *hydreuma* had with the Via Hadriana also remains unanswered.

The small *hydreuma* also seems to have housed troops, no doubt sent out from the larger fort at 'Abu Sha'ar, one of whose tasks was to produce food for the garrison at 'Abu Sha'ar.⁶⁵ Ceramic evidence indicates that the

hydreuma was occupied in the fifth-late sixth/seventh centuries, though there was insufficient data to determine if a period of abandonment occurred between the military and the ecclesiastical occupations, as seems to have been the case at 'Abu Sha'ar. The *hydreuma* undoubtedly continued to produce food for the Christian inhabitants of 'Abu Sha'ar at that time.

There were numerous military installations constructed in the late third-early fourth centuries throughout the eastern Roman empire and in Egypt as part of the Diocletianic-Constantinian reorganization of the frontiers.⁶⁶ The facilities at 'Abu Sha'ar seem to have been part of this effort.

There is growing evidence from surveys conducted by the author, the University of Michigan, and the Oriental Institute, University of Chicago,⁶⁷ of substantial late Roman/"Byzantine" activity in the Eastern Desert and on the Red Sea coast, including mining and quarrying; commerce; protection of civilian travelers, Christian pilgrims, and government officials; and monitoring potentially hostile activities of tribes like the Blemmyes and Nobatae.⁶⁸ The installations at 'Abu Sha'ar and Bir 'Abu Sha'ar el-Qibli were part of those activities, too.

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(Sayala-Nubia)," *BSAC* 21 (1971-73), 125-33. For examples elsewhere in the Roman east, see H. C. Butler, *Syria; Publications of the Princeton University Archaeological Expeditions to Syria in 1904-1905 and 1909. Division II. Architecture. Section A. Southern Syria* (Leyden, 1919), 145-48, at Deir Il-Khaf, Syria; see also S. T. Parker, *Romans and Saracens: A History of the Arabian Frontier* (American Schools of Oriental Research Dissertation Series no. 6) (Winona Lake, Ind., 1986), 21-24 on Deir Il-Khaf; B. Isaac, *Limits of Empire: The Roman Army in the East* (Oxford, 1990), 206-8. In Judaea, specifically, see Y. Hirschfeld, *The Judean Monasteries in the Byzantine Period* (New Haven, 1992), 47-54.

⁶²Suggested by Sidebotham, et al., "Survey," 622; Sidebotham in Maxfield and Dobson, *Roman Frontier Studies*, 495-96; idem, "A Roman Fort," 8.

⁶³For Sassanian Christians visiting holy sites in the eastern Roman Empire and Egypt in the fourth-fifth centuries, see A. D. Lee, *Information and Frontiers: Roman Foreign Relations in Antiquity* (Cambridge, 1993), 56-60.

⁶⁴See above, note 16.

⁶⁵See above, note 14.

⁶⁶J.-M. Carrié, "Les *Castra Dionysiados* et l'Évolution de l'Architecture militaire romaine tardive," *MélRome* 86,2 (1974), 837; Sidebotham, "Preliminary Report," notes 59-68. See also Wareth and Zignani, "Nag Al-Hagar," 185-210; in general for Upper Egypt, see A. K. Bowman, "The Military Occupation of Upper Egypt in the Reign of Diocletian," *BASP* 15, 1-2 (1978), 25-38.

⁶⁷Prof. H. Wright of the University of Michigan has been directing a survey of sections of the Berenice-Nile roads. Dr. C. Meyer of the Oriental Institute, University of Chicago, has been conducting a site-intensive survey of Wadi Umm/Bir Fawakhir. For other publications on the northern end of the Red Sea in the fourth and subsequent centuries of Roman occupation, see above, note 60.

⁶⁸For bibliography on the Blemmyes and Nobatae, see Sidebotham, et al., "Survey," 621 note 96, and L. P. Kirwan, "Studies in the Later History of Nubia," *Liverpool Annals of Archaeology and Anthropology* 24, 1/2 (1937), 69-105.